PAINT and VARNISH Production

HE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHES

ADVANCE

Leaders can never sit back self-satisfied. Leadership is both a reward and a responsibility.

Advance Solvents & Chemical Corporation, the pioneer in the soluble naphthenate drier field, accepts its role of leadership fully recognizing the responsibility it entails. The responsibility is this — to deliver the best and latest in new products and ideas and to constantly strive for the utmost in quality of established products.

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Additive Chemicals for the Process Industries

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For better through dry with greatly improved film characteristics.

ADVANCE PMO 10%

Fungicides for paint — powerful aids to prevent mildew on painted surfaces.

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ADVANCE ASKA ANTI-SKINNING AGENT

Low cost, mild odor, completely volatile, excellent stability, no paint pigment-vehicle separation.

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UNE
954

Off limits for price minded buyers

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These high phthalic content pure drying alkyds are your dish *only* if you're formulating a baking enamel line where performance . . . not price . . . is paramount. Makers of such enamels tell us 1343 and P-710 "can't be beat" when it comes to initial color, baking speed, color retention, adhesion and durability.

	No. 1343	P-710
Non-Volatile	49-51%	49-51%
Volatile	95% Xylol-5% Butanol	Xylol-Butanol
Viscosity (Gardner-Holdt)	W-Y	Y-Z
Color (Gardner-1933)	3-5	6 Max.
Acid No.	5-10	4 Max.
Phthalic Anhydride (Min. on Non-Volatile)	43%	42%

For formulating information and samples on these "exceptional quality" alkyds, write:

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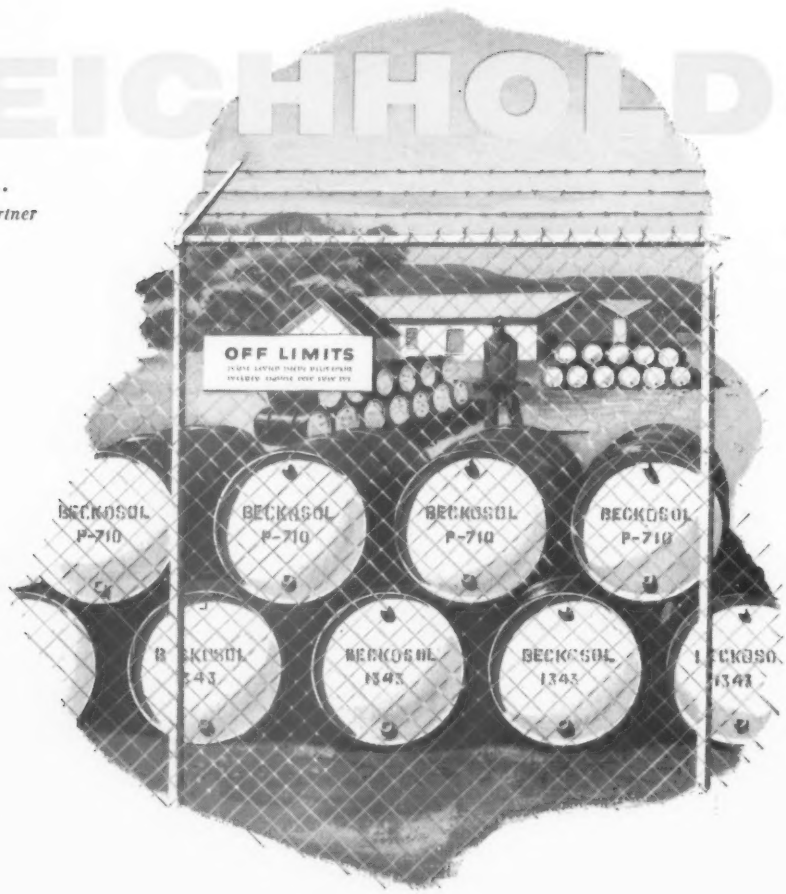

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Sodium Sulfate
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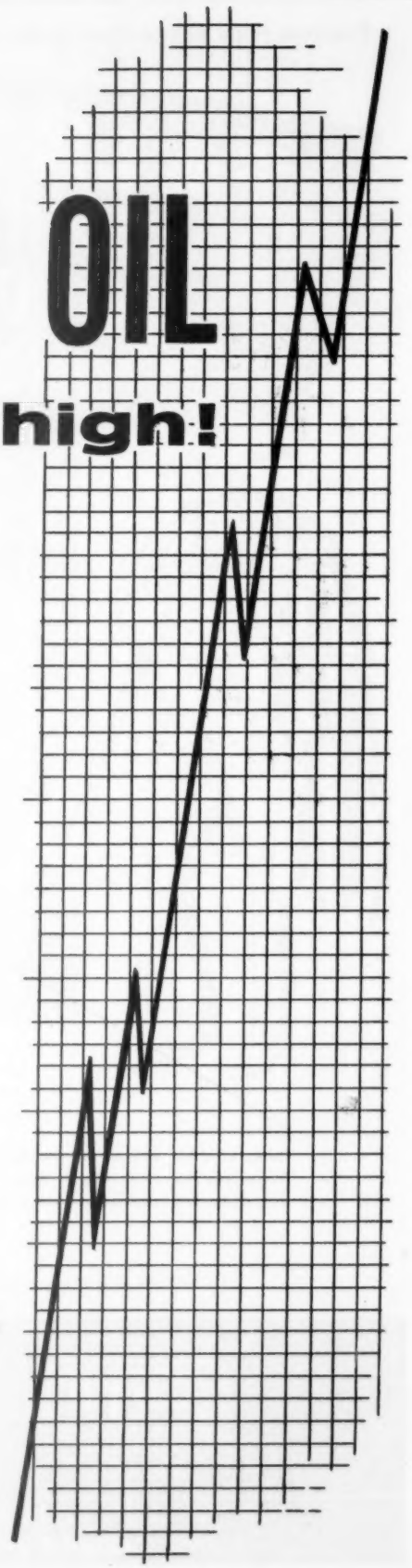

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Biggest safflower crop in history gives us greater stocks than ever before. But *demand* is the biggest in history, too. So make plans now to guarantee your supply through 1954. Ask us about our pegged, long-term delivery plan.*

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PACIFIC VEGETABLE OIL CORP.

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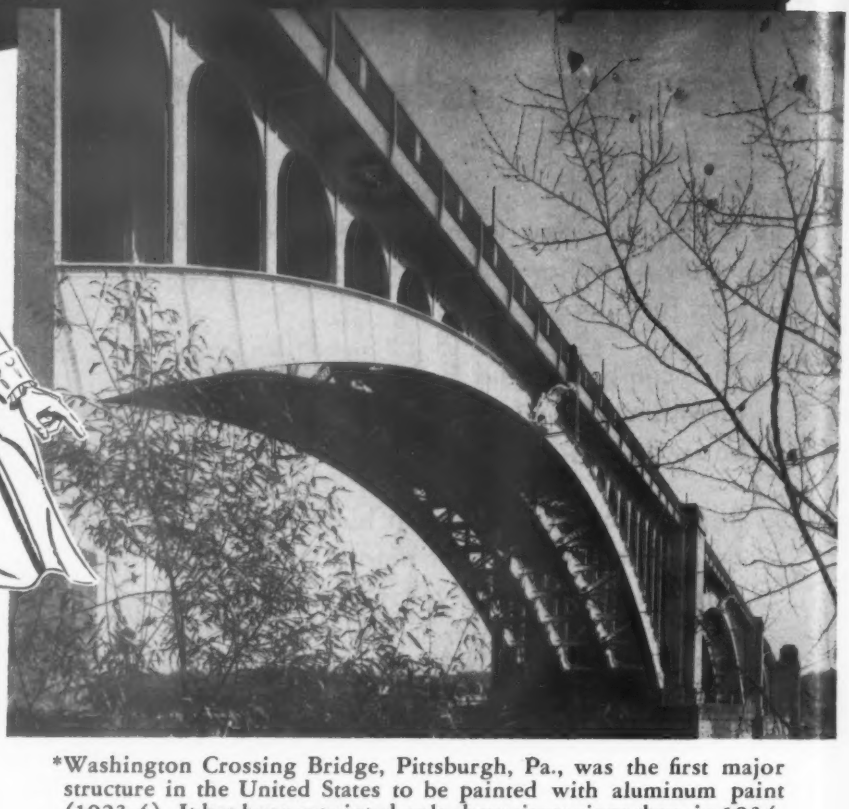
ALUMINUM PAINTS



*Washington Crossing Bridge, Pittsburgh, Pa., was the first major structure in the United States to be painted with aluminum paint (1923-4). It has been repainted only three times since then, in 1934, 1946 and 1953. This bridge is painted with Falkyd Solution A-5-D.

WHATEVER YOUR ALUMINUM PAINT PROBLEM . . .
Whether for municipal, county, state or federal specification finishes, for polychrome finishes, for interior or exterior paints . . .

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PAINT and VARNISH Production

(REG. U.S. PATENT OFFICE)

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

VOL. 44 JUNE, 1954 NO. 6

NEXT ISSUE

"The Application of Gas Heat in the Treatment of Oils and Resins" will be discussed in our July issue. This article outlines the heat treatments necessary to produce the desired properties in oils and varnishes and also describes the various type of burners employed in the varnish cooking processes. Actual operating gas heating units are presented in this article.

★ FEATURES

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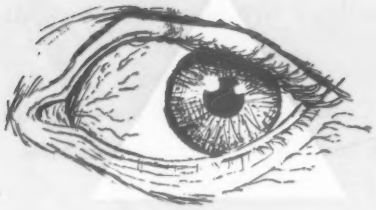

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Editorial Comment

June, 1954

Automation in Paint Production?

SPEAKING before the New York Society of Security Analysts, A. M. Wilson, executive vice president of Minneapolis-Honeywell Regulator Co. recently predicted that technical advances in manufacturing methods assure this country there will be no real recession for a long time. He based this remark on the fact that technological advances offer such major chances to cut costs that competition will force industry to invest in them, and high capital investment means prosperity.

Mr. Wilson credited post-World War II tension with heading off any such let down as followed World War I. He said that billions of dollars are spent each year on developing new materials and new techniques which will flow from military into civilian application. This converts military strength into productive leadership. It also accelerates the technological obsolescence which keeps capital spending high.

Mr. Wilson estimated that some $16 billion of the $26.5 billion capital spending projected for 1954 will go into modernization of facilities and equipment.

In this connection, the Honeywell executive made special reference to the automation field and what it is doing in the processing industries.

The application of automatic processing in paint manufacturing, which consists primarily of batch operations, is something which the industry must consider in the future. James W. Reynolds of the General Electric Co. in a recent address entitled, "Future Demands on the Paint Industry" before the New York Paint and Varnish Production Club, pointed out that one of the problems that the paint industry will be facing is boosting production to meet customer requirements, and in many instances, this must be done without necessarily increasing plant size.

It is true that automation has made some inroads, but by and large these have been confined to particular unit operations of paint manufacturing.

Continuous automatic production encompassing handling, manufacturing, inspecting, testing and packaging may not appear in the paint plant for some time to come, but with most processing operations tending toward automation for cost and labor-savings, it would be wise for the paint industry as a whole to look into automatic processing devices and determine their applicability in paint processing.

The Weather and Paint Sales

MARK TWAIN once said, "Everybody talks about the weather but nobody does anything about it."

Since World War II, applied meteorology has been steadily attaining an important place in our daily lives, economy, and defense. Such achievements as "rain making" has awed man.

We are all conscious of the effect that weather has on the sale of particular goods and services. The weather can work to the advantage of a particular manufacturer while on the other hand may be very disastrous to another. Paint sales have both suffered and flourished under various weather conditions.

In the past decade, there has been considerable research in the field of long range forecasting. From this research have come certain interesting facts: (1) we are now under the influence of a long warm weather cycle; (2) winters are becoming warmer and with less snow; and (3) summers are becoming hotter and drier.

Such prospects in our weather conditions, spurred by the "do-it-yourself" trend will undoubtedly have the effect of increasing paint sales in the years immediately before us.

The Quality Pigment for
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For adding sales advantages and quality features to your latex paint line look into Gen-Flo today. For more information fill out the coupon below or write to The General Tire & Rubber Company, Chemical Division, 1708 Englewood Avenue, Akron 9, Ohio.

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...one of a series of condensations from laboratory reports detailing uses of *BENTONES* 18-C and 34

NEW DUTCH BOY BENTONE 18-C *IMPROVES BOTH EPOXY RESIN PRIMERS AND TOP COATS*

BENTONE 18-C is a new *DUTCH BOY* gellant for liquid mixtures containing high proportions of polar constituents . . . such as epoxy resin coating solvents, for example.

Thus *BENTONE* 18-C imparts useful properties to industrial paints based on epoxy resin vehicles. It gives both the baked and the air-dried anti-corrosive primers and white topcoats improved film integrity and brushability.

BENTONE 18-C insures good brushing properties and freedom from hard pigment settling. It also gives anti-corrosive primers desirable increases in water resistance. In white epoxy resin topcoats, film thickness and sag properties may be controlled by varying usage of *BENTONE* 18-C.

BENTONE 34 *Boosts The Durability of Asphalt Paints*

Because it reinforces Asphalt Paint films, *BENTONE* 34 minimizes softening due to heat – embrittlement due to cold. It also overcomes sag tendencies – no adverse effects on solvent release and drying time.

Gets an "A" in Settling Test

By using *BENTONE* 34, a manufacturer of a light metal alloy primer was able to meet the severe settling test imposed by military specification. The test, involving dilution with two and one-half volumes of toluene, is most difficult to meet in regular production.

Gives Excellent Pigment Suspension To Metal Protective Paints

Noted for contributing excellent pigment suspension to metal protective paints, *BENTONE* 34 also imparts improved moisture resistance and water repellency. Improves working properties, too – no adverse action on adhesion, no impairment to drying.

HOW TO FIND OUT MORE ABOUT *DUTCH BOY BENTONES...*

Write for new brochure, *"DUTCH BOY BENTONE* 18-C." It gives properties, application, incorporation suggestions. And, if you do not yet have a copy, send for the 84-page *"BENTONE* Handbook." It covers in detail theory of *BENTONE* action, use factors, general formulations with reference to *BENTONE* 34.

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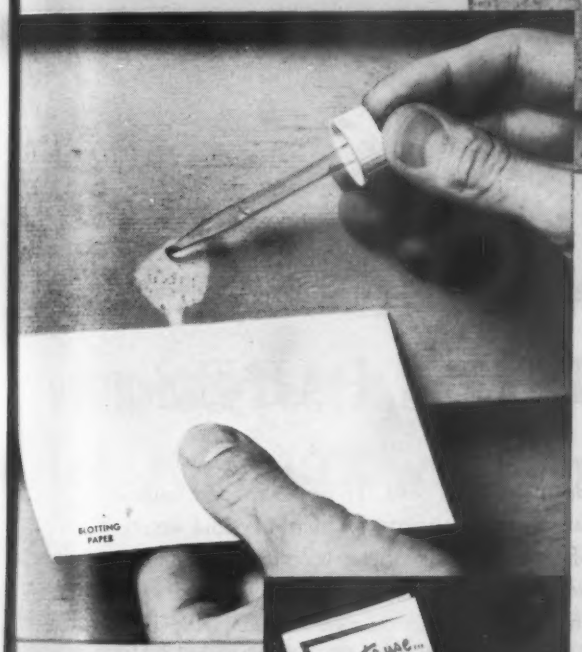
DIRT...or MILDEW?



EASY TO USE...

Simply apply bleach solution to suspected area, blot and flush with water. If the area remains dark, it indicates inanimate dirt, chemical or other staining. If bleaching occurs, mildew is present.

THE NUODEX MILDEWTECT KIT GIVES YOU THE ANSWER ON THE JOB

The Nuodex Microbiological Laboratory has developed the *Mildewtect Kit*, a simple chemical test that provides an on-the-job answer to the question: "Is it dirt or is it mildew?"

Rated 96% accurate in almost 600 tests, the Mildewtect method of mildew determination—which operates on a bleach principle—will in most cases save the time previously needed for laboratory diagnosis of paint chips.

These pocket-size kits have been sent to the technical directors of all paint manufacturers. Additional kits, if desired for technical service or sales representatives, will be supplied at our cost. In writing for details, please mention quantity required. Nuodex Products Co., Inc., Elizabeth, New Jersey.

The Mildewtect Kit is another service to the paint industry by the manufacturers of Super Ad-It,® *your best bet to prevent paint mildew.*

1047

NUODEX
Special Purpose Chemicals To Serve Industry

and for other ways to help make **GOOD PAINT BETTER...** try NUODEX EXKINS (anti-skinning agents); NUACT PASTE (loss-of-dry inhibitor); NUADE (roller-mill grinding aid); NUOSPERSE 657 (wetting, dispersing, anti-settling agent)... and for all your formulations: NUODEX NAPHTHENATE, NUOLATE, OCTOATE and ODOREX—*the original certified-metal-content driers.*

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DOW'S years of research will help you produce quality latex-based masonry and stucco paints

Dow Latex 512-K has been satisfactorily formulated into masonry and stucco paints which can be sprayed or brushed on, and that have easily endured three to five years of rough weathering with good film integrity. Exterior paints made with Dow latex form a protective film which is extremely durable and provides good alkali resistance for masonry and stucco.

But that's not all! These easy-to-formulate latex exterior paints for masonry and stucco offer the painter the extra convenience and better results that earn customers and keep them. Latex exterior paints made with Dow Latex 512-K are not only easier to apply, but dry fast.

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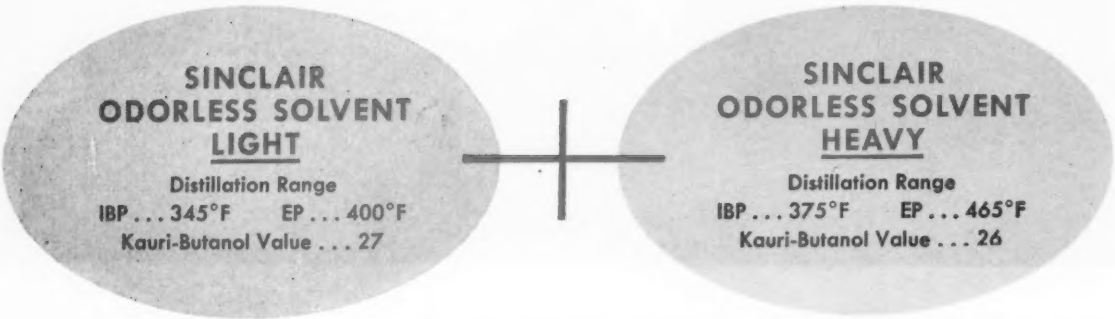

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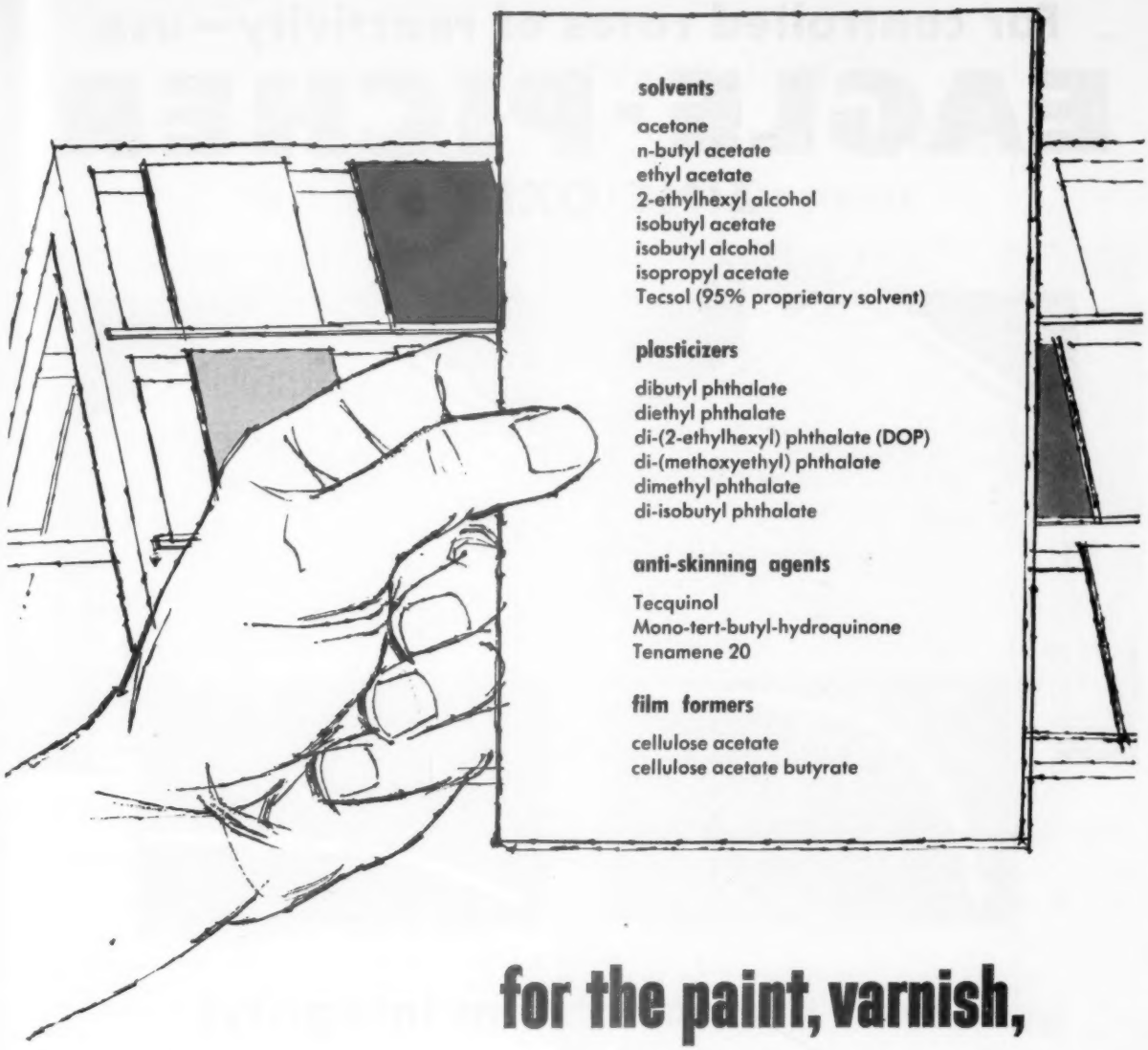

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for the paint, varnish, and lacquer industry

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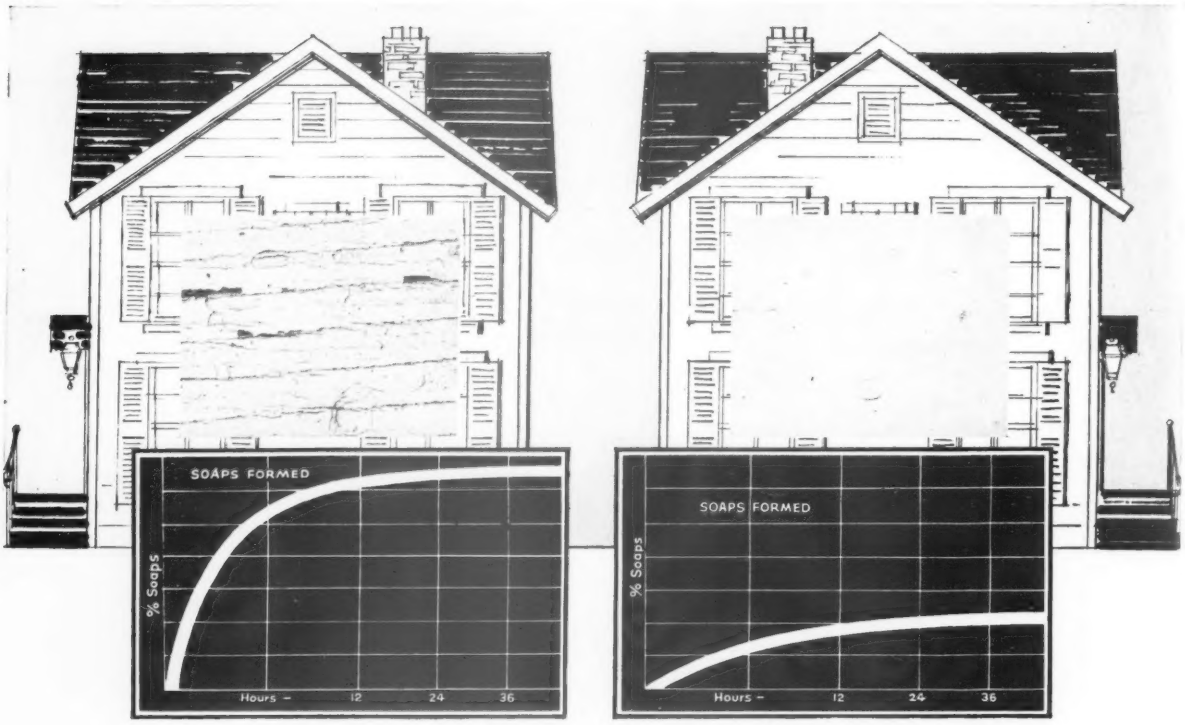
ZINC OXIDES



Here's proof of film integrity!

Performance tells the tale. Two paints, formulated to the same federal specification, were applied to test fences and test houses. The pictures above show the results after 36 months of exposure to weather. The paint on the left was made with fast soap-producing pigments. The one on the right was made with Eagle-Picher Leaded Zinc Oxide No. 356 . . . proof that you get improved film integrity in paints by using pigments of slow chemical reactivity. Pigments exhibiting high rates of chemical activity impair film integrity.

For most effective control over the rate of soap formation, insist on Eagle-Picher Zinc Oxides.

Remember, Eagle-Picher is the largest manufacturer producing *both* zinc and lead pigments . . . Eagle-Picher backs up its products with unequalled customer service, strict quality control.

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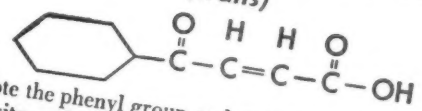
THREE NEW NATIONAL ANILINE INTERMEDIATES

with multiple multi-functional groups and points of potential reactivity

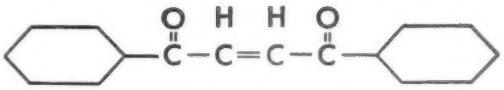
BETA BENZOYL ACRYLIC ACID

(trans)



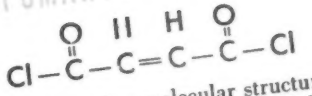
Note the phenyl group and carboxyl group at opposite ends, the keto group and double bond in the middle . . . four points of reactivity for your own exploration. Technical Bulletin I-6 includes a comprehensive literature search.

trans-1,2-Dibenzoyl Ethylene



With its reactive double bond and its two carbonyl and phenyl groups, this diketone molecule should be widely useful in compounding resins, plastics, pharmaceuticals, etc. Technical Bulletin I-3 contains six pages of chemical properties and reactions plus copious literature references. Use it as a starting point in your work.

FUMARYL CHLORIDE



Here is an interesting molecular structure with a reactive double bond and two acyl halide groups that should be a versatile building block in organic syntheses. Technical Bulletin I-7 summarizes present data, gives typical reactions and literature references as a guide to your possible application research.

To tell you where you can use such highly-reactive chemicals would be impractical and presumptuous. So we merely direct your attention to their many multi-functional groups and let your chemical imagination take wings.

Samples are available for work that may lead to volume use. Current semi-plant production can be expanded to meet commercial demands. Derivatives and modifications can be made for applications with substantial potential use.

Write now for technical bulletins for yourself and your associates. We will be glad to give you as much technical help on commercial applications as you wish . . . in complete confidence, of course.

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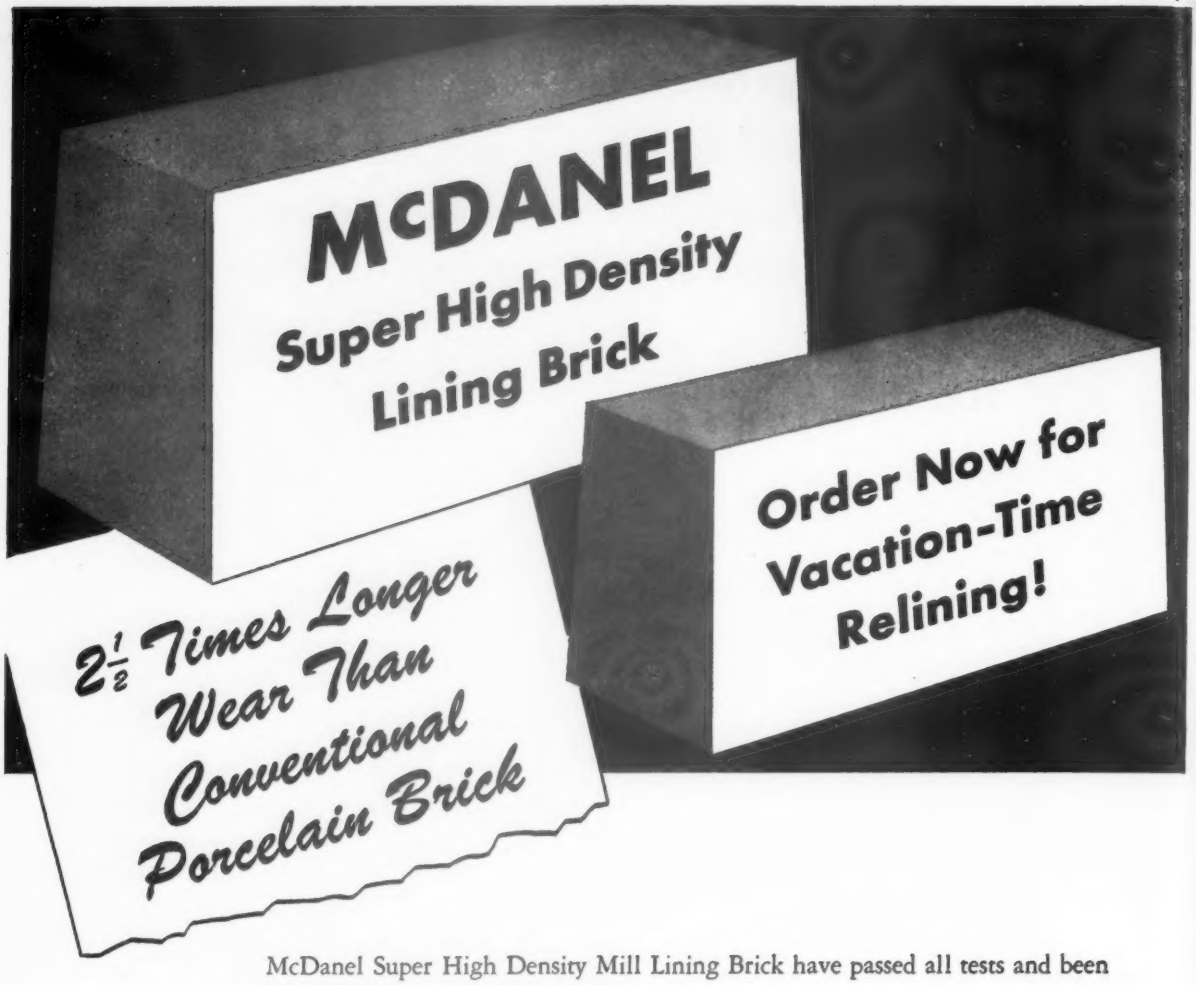

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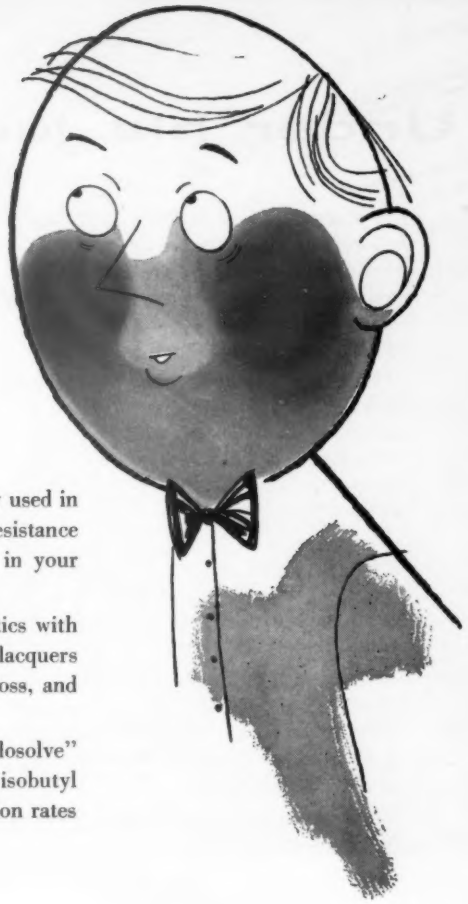

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Under his jacket

Are you proud that he has everything he needs as he starts the adventure of each day at school? Be prouder still of something hidden under his trim jacket —the stout heart that sends him off unafraid and eager.

This, too, you have given him because your love has made his small world secure. With it, he will build his own security as each challenge comes, in those days when he must stand alone without you.

What finer gift can you give those you love than the gift of security? It is the great privilege in America, where we are free to provide it.

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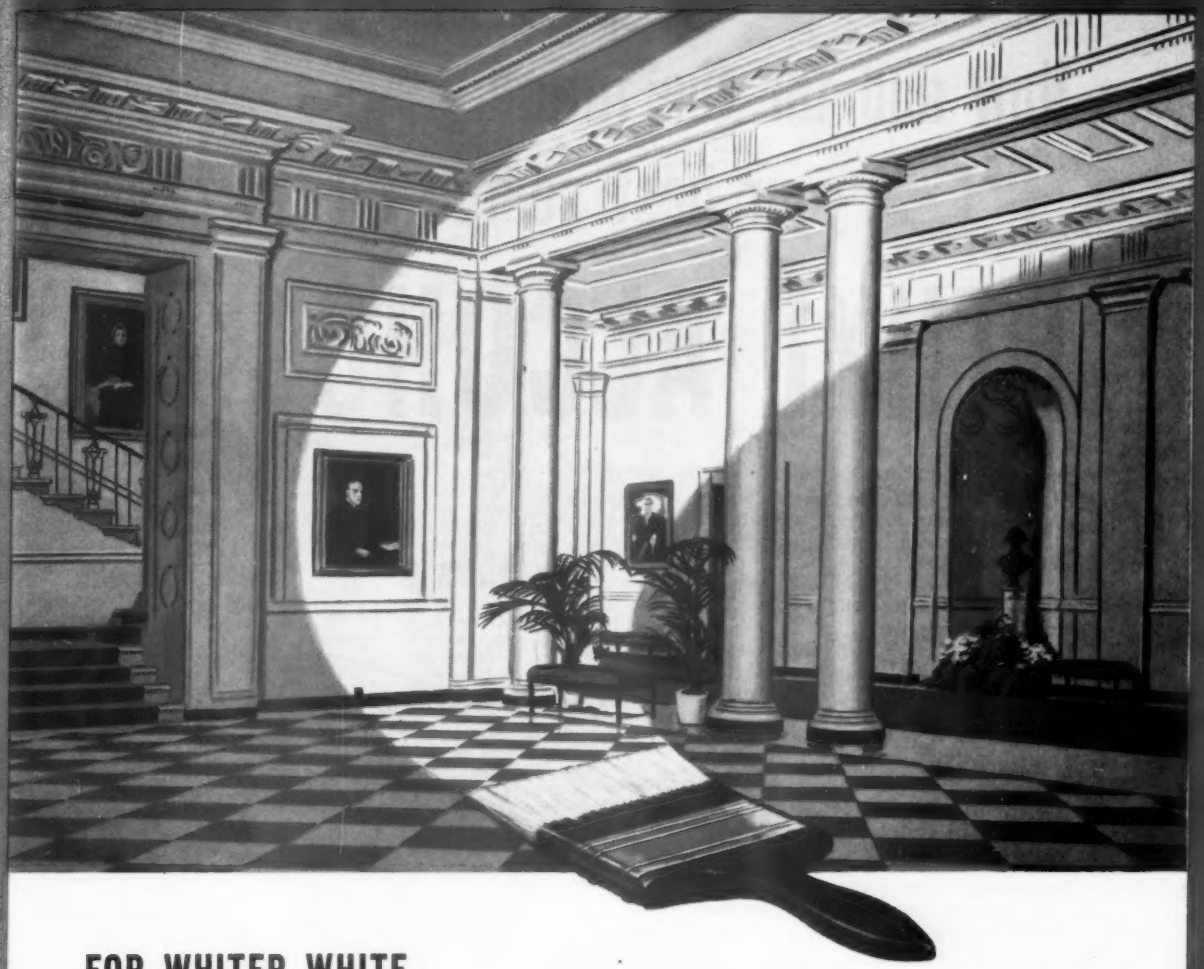

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EFFECT OF EXCESS POLYOL ON MALEIC--ALKYD PREPARATION

By B. G. BRAND
A. D. SILL
E. R. MUELLER
Battelle Memorial Institute*

A laboratory study of the effect of amount and type of excess polyol on the cooking characteristics and film properties of a maleic-tall oil alkyd has shown that there is a marked effect on vehicle bodying rate, a noticeable effect on storage stability, and a slight effect on cold-water resistance. Drying rate and adhesion appear to be essentially unaffected. Excess glycerol over the range from 0 to 25 per cent and pentaerythritol from 0 to 10% were studied. Data are presented in graphic form for viscosity development and storage stability.

The results obtained were based on laboratory cooks in glass equipment. It is not expected that the data can be directly applied to all conceivable types of production equipment, but they can be used as a guide to interpret unexpected results in many cases.

Preparation of a glycerol-maleic alkyd, using 9.5% maleic anhydride, required 20% excess glycerol to be charged in order to cause gelation. Below that amount, the viscosity increased to a maximum (probably the result of glycerol loss) and then decreased with additional cooking. This lowering in viscosity is attributed to hydrolysis and further glycerol loss. This phenomenon was not found with PE as the polyol, down to 0% excess.

MANY RESIN manufacturers have expressed interest in incorporating as much maleic anhydride in the formulation of tall oil-maleic alkyds as is possible. When large amounts of maleic were used, several companies encountered serious seeding out of small gelled particles.

A comprehensive research program was undertaken at *Battelle Memorial Institute* covering the effect of many variables on the production of high-maleic tall oil vehicles. Such variables as cooking schedule, time of addition of maleic to the cook, maximum amount of maleic that can be incorporated, optimum quality that can be obtained, and effect of varying the excess polyfunctional alcohol were studied. This paper presents findings in the last phase of the study, in the hope that they will be of some use, especially to producers of high maleic tall oil vehicles.

In the preparation of an alkyd from its basic ingredients, it is usually found expedient to add a slight excess of the polyhydric alcohol over the stoichiometric requirements to satisfy the acidic ingredients. The common practice is to use from 5 to 15 per cent more than the theoretical quantity. The main function of this excess alcohol is to decrease the cooking time required to reach a low acid number. In the case of glycerol alkyds, the excess glycerol is frequently needed to obtain a satisfactorily high viscosity and low acid number. Variations in excess polyol might be used to control cooking times, but a general feeling that film quality might be affected has limited this practice.

In the preparation of alkyd resins based on tall oil as one of the raw materials, the same practice is usually employed as with conventional materials. A study of the effect of the amount of excess polyol on tall oil alkyd quality was undertaken to permit the preparation of an alkyd resin with optimum properties.

Since some glycerol is known to distill off during the cooking process under normal conditions, the exact amount of free hydroxyl in the finished resin should be used as a basis of comparison. For example, there were indications in the early phases of this work that as much as 10 per cent of the glycerine charged to the kettle distilled into the water trap of a solvent-reflux apparatus during the cooking process.

Several analytical methods[1] were tried for determining the free hydroxyl content of alkyd resins, but all methods were found to be subject to so many variables that the results obtained with them were unreliable. Satisfactory results could be obtained on conventional oils, but the method was valueless for tall oils or tall oil vehicles. Time did not permit a thorough investigation of these variables nor the development of a satisfactory analytical method. Certain other methods, such as the phthalic acid method of Elving and Warshowski[2] and reported to be used by the *Shell Chemical Company*, are known, but have not been investigated for this particular application. It is hoped these can be the subject of a later investigation.

The results obtained in this study are therefore based solely on the amount of polyol charged to the reaction kettle at the start of the cook.

It should be pointed out that the temperatures used for preparing the glycerol alkyds were somewhat higher than usually found in practice. These higher temperatures probably increase the amount of glycerol lost by distillation and decomposition, and probably accentuate the effects that might normally be found in commercial practice. One method used to help reduce glycerol loss is to partially react the glycerol at lower temperatures before going to higher temperatures as des-

*This paper was presented at the Spring, 1953, meeting of the Paint, Plastics, and Printing Ink Div. of the ACS in Los Angeles and has been released for publication by the ACS editors.

cribed by Lum and Carlston[3]. The higher than normal temperature was purposely used, to permit a more valid comparison of glycerol versus pentaerythritol as the polyol.

Alkyd Preparation

Maleic alkyds were cooked using excesses of 0, 10, 15, 20, and 25 per cent glycerol over the stoichiometric requirement. A maleic anhydride content of 9.5% based on the tall oil charged was chosen for the glycerol series, since this is representative of many commercial high-maleic materials.

The alkyds prepared in this study were all cooked using the solvent-reflux system with mineral spirits. The apparatus used was a 2-liter, 3-necked flask fitted with a Dean and Stark water trap and reflux condenser, and a variable speed agitator. About 2% of the total charge was mineral spirits, to provide an inert atmosphere over the surface of the cook. The tall oil used was "Unitol S," an acid-refined type, produced by *Union Bag and Paper Corporation*. Its composition and constants are given in Table I.

The tall oil maleic-adduct was prepared by heating to 450°F until all the maleic anhydride was reacted, as indicated by the dimethyl aniline (DMA) test[4]. The polyol and mineral spirits were then added and the temperature raised to 560°F. Although, as previously stated, this is a high temperature for glycerol cooks, it was found optimum for PE cooks in some earlier work in this laboratory, and was used here to minimize the number of variables in this study to permit a better comparison of the glycerol and PE series. The final vehicles were cooked to an acid number of about 10 and a Gardner-Holdt viscosity of about H at 50% NVM in mineral spirits. Samples were withdrawn periodically from the cook, and the viscosity determined at 70% NVM in mineral spirits.

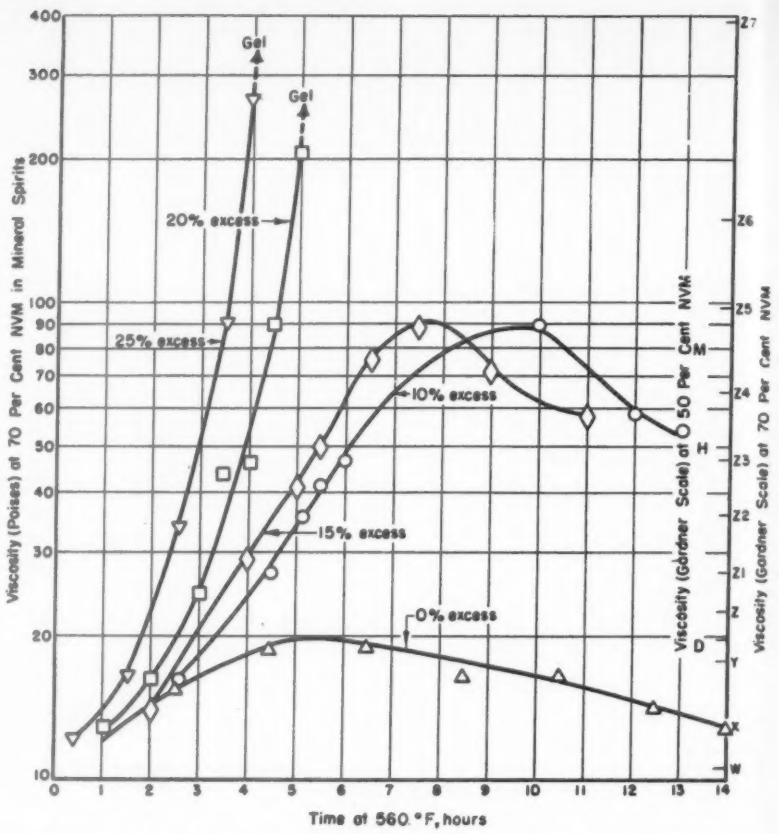


Figure 1. Effect of excess glycerol on the bodying rate of tall-oil maleic alkyds.

Effect of Excess Glycerol on Viscosity

Figure 1 shows the rate of viscosity development with time for these glycerol vehicles. It is readily apparent that the bodying rate increases rapidly with the increase in excess polyol. Also, the maximum viscosity that can be attained increases with excess polyol, up to the concentration that produces gelation. For example, the 0% excess alkyd reached a Y-Z viscosity, while the 10% excess alkyd bodied to a Z-4 to Z-5 viscosity. The 15% excess alkyd bodied to the same viscosity, but reached that point 2-½ hours earlier. It is also apparent that it is possible to gel a maleic glycerol alkyd by using 20% excess glycerol. At 15% excess and below, a gel does not form, even with extended cooking. In fact, loss of body is obtained by cooking after the maximum viscosity has been reached.

Effect of Temperature on Glycerol Cooks

It was suspected that the higher than normal temperature of 560°F used in this study was contributing to a greater than normal loss of glycerol during the cooking process. Therefore, the 10% excess alkyd was recooked at 525°F, which more nearly approaches the temperatures commonly used in commercial production. Figure 2 shows the bodying rates obtained for 10% excess glycerol alkyds at 525°F and 560°F. It can be noted that the bodying rate is slower all along the range, as was expected. However, the important fact is that, whereas the alkyd cooked at 560°F reached a maximum viscosity in about 9 hours and decreased with additional cooking, the alkyd cooked at 525°F did not

Table 1. Composition and constants of tall oil used in this study.

Composition	%	Constants	
Resin Acids	44.5	Acid Number	158
Fatty Acids	47.7	Iodine Number (Wijs)	155
Unsaponifiables	7.7	Color, 1933 Gardner std.	10.5
Moisture	0.1	Viscosity, Gardner	Z-2

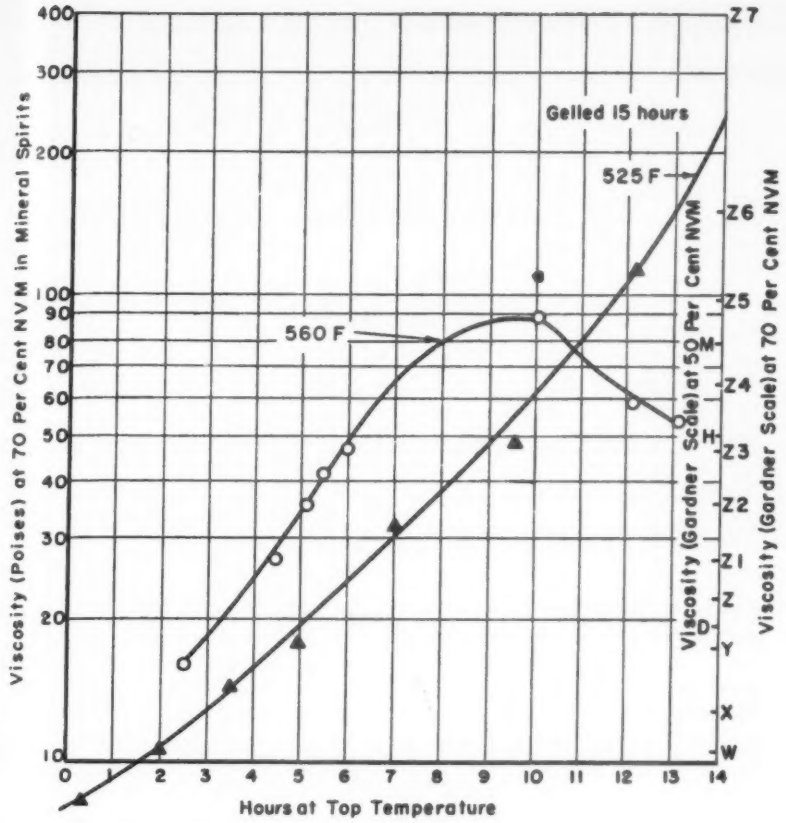

Gelled 15 hours
525 F
560 F
Viscosity (Poises) at 70 Per Cent NVM in Mineral Spirits
Viscosity (Gardner Scale) at 50 Per Cent NVM
Viscosity (Gardner Scale) at 70 Per Cent NVM
Hours at Top Temperature

Figure 2. Effect of cooking temperature on the bodying rate of tall oil-maleic glycerol alkyds cooked with 10 percent excess of glycerol.

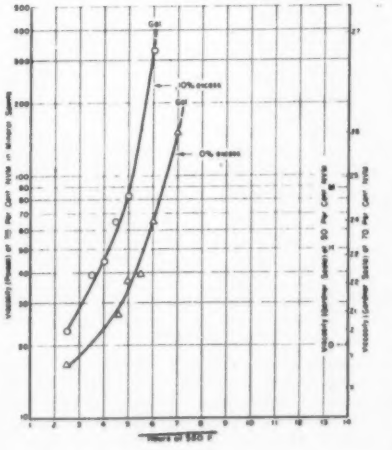
reach a maximum but continued on to gellation in 15 hours. These data are interpreted as further proof that glycerol loss is definitely occurring at the higher cooking temperature. The amount of glycerol lost would depend in a large degree on the particular peculiarities of the individual cooking equipment being used.

Effect of Excess PE on Viscosity

The same type of study was made using pentaerythritol as the polyol. Excesses of 0 and 10% of polyol were used. In order to obtain viscosities and acid numbers in the same range as the glycerol cooks, the maleic anhydride content was decreased to 5.6% based on the weight of tall oil. Figure 3 shows the bodying-rate curves obtained for these vehicles. Here again, the increase in bodying rate with increasing excess polyol is readily apparent.

It can also be noted that practically equivalent bodying rates were obtained in the equipment used in this study with 10% excess PE and 20% excess glycerol. Also, in the first stages, 0% excess PE is practically equivalent to 10% excess glycerol. However, it should be noted that the 0% excess PE vehicle gelled in about 7 hours, whereas the 10% excess glycerol sample slowed down and reached a maximum viscosity slightly later (10 hours), after which the viscosity started to fall off. This difference, we feel, can be attributed at least in part to the volatility differences between glycerol and pentaerythritol. This, incidentally, is very probably the reason for the decrease in viscosity obtained with extended cooking. The glycerol is probably lost by hydrolysis of the alkyd and subsequent volatilization of the glycerol, which breaks down the resin structure and gives a decrease in viscosity.

Figure 3. Effect of excess PE on the bodying rate of tall-oil maleic alkyds.



The 0% excess PE alkyd could be gelled, which indicates very little, if any, polyol loss by volatilization from this cook, as compared to the corresponding glycerol cooks.

Previous data obtained from another study have indicated that there is very little difference in the rate of esterification of tall oil between glycerol and pentaerythritol[5]. In fact, some indication has been seen from work on other problems in this laboratory that glycerol gives a faster esterification rate than does PE, in spite of the fact that all alcohol groups of PE are primary, while 1/3 of the alcohol groups of glycerol are secondary. This might be explained by the fact that PE esterifies fatty acids faster than glycerol, but that glycerol esterfies rosin acids faster than PE, presumably because of steric factors[7]. Other workers have investigated esterification rates of fatty acids, and their work has been summarized in the paper of Mueller, Eness, and McSweeney[5]. Probably the most comprehensive of the papers presented in this field is that by Konen, et al[7]. It must also be remembered that less maleic was added to the PE cooks in order to control the viscosities and acid numbers of the two series. Therefore, it is difficult to make any valid comparisons between the two series, other than to note the relative results obtained in each instance.

Effect of Excess Polyol on Film Properties

Evaluations of some of the more important film properties were made on films of the alkyds at approximately equal viscosity and acid number. These results are presented in Table II. An examination of these results indicates very little difference in film

Table II. Effect of Excess and Type Polyol on Film Characteristics of Tall Oil-Maleic Alkyds

Cook No.	% Maleic (on Tall Oil)	Polyol Type	% Excess (on Polyol Charged)	Acid No. (on N.V.M.)	Gardner-Holdt Viscosity (50% N.V.M.)	Tack-Free Time (hrs)	Print-Free Time (days)	Conical Mandrel Flexibility at 1 Week (% Elongation)	Cold-Water Resistance 0 hr.	½ hr.	2 hr.	24 hr.
26	9.5	Glycerol	0	16	D	(Not run because of low viscosity)						
24	9.5	Glycerol	10	12	G-H	9-15	7-9	<3%	2	1	0	0
34	9.5	Glycerol	15	11	H	9 15	7-10	<3%	2	1	1	1
28	9.5	Glycerol	20	11	G-H	9-15	9-14	<3%	2	1	1	1
36	9.5	Glycerol	25	10	K+	9-15	10-14	<3%	2	2	1	1
20	5.6	PE	0	13	I-J	9	4-7	<3%	2	1	0	0
18	5.6	PE	10	11	H	9	3-4	<3%	2	1	0	0

Driers used — 0.06% Co, 0.06% Mn and 0.6% Pb naphthenates as metal based on varnish N.V.M.
Film thickness — 1.1 ±0.1 mils.
Water Resistance — 0 = complete recovery, 1 = very slight white, 2 = slight white, 3 = very white.

quality for any of the alkyds in these two series. In fact, the variations noted in the evaluations were all within the limits of experimental error and should probably be disregarded. It is hoped a more complete evaluation of the film properties of these alkyds can be made at a later date, in order to more carefully evalutate any quality differences that might exist.

However, it has been possible to identify the following trends from this study:

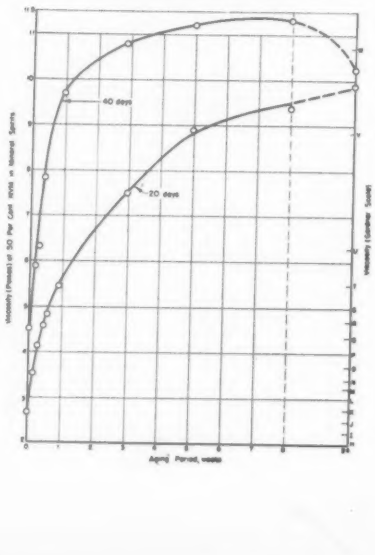
1. Increasing excess glycerol gave slightly poorer cold-water resistance.
2. Increasing excess PE from 0 to 10% did not affect cold-water resistance.
3. Drying rate and adhesion are essentially unaffected by amount of excess polyol.
4. Comparison of glycerol and PE at the 10% excess level indicates no essential differences in drying rate, adhesion, or cold-water resistance.
5. Flexibility of all films was poor, so that any possible differences present could not be detected.

Effect of Excess Polyol on Storage Stability

A notable difference in storage stability was found in the glycerol series. The age of the alkyd before adding driers and starting storage-stability tests was found to have an appreciable effect. Figure 4 shows the variation in storage stability produced by aging the 15% excess glycerol alkyd for 20 to 40 days before adding driers[8]. This test was carried out by aging the varnish, containing driers, in a Gardner-Holdt viscosity tube and periodically observing the viscosity of the sample. The major difference is found in the initial period. After 24 weeks' aging both samples had reached essentially equal viscosities.

A noteworthy variation was also found in the storage stability of samples of varying excess polyol aged for 20 days before adding driers. These results are shown in Figure 5. The 0% excess glycerol alkyd is not included in this figure, since it could not be cooked to the proper initial viscosity, as was noted in Figure 1.

Figure 4. Change in can stability of a tall oil glycerol-maleic alkyd with age of vehicle before adding driers.



The variations noted are not readily correlated with the amount of excess polyol. Evidently, variations in excess glycerol affect storage stability appreciably but no correlations with excess glycerol could be made since the amounts present in the final vehicles are not known. It does appear, nevertheless, that minor variations in initial viscosity after driers are added might be one of the factors involved. It is felt that insufficient data are available to make a definite conclusion in this respect.

Storage-stability tests of the alkyds without driers show practically no change in viscosity on aging over a 24 weeks' period. It is, therefore, concluded that the viscosity pickup noted in this series is, as would normally be expected, due to the action of the driers on the alkyd samples. Storage stability of both PE vehicles was good indicating better storage stability is obtained with PE than with glycerol.

Practical Applications

From the data presented above, it is obvious that difficulties in obtaining viscosity in tall oil-glycerol-maleic alkyds might result from glycerol losses during cooking and that proper control of amount of excess glycerol charged should eliminate such difficulties.

(Turn to page 79)

Hercules Coatings Laboratory

KEEPS 11-MAN STAFF BUSY DURING FIRST YEAR'S OPERATION

Gregory Bruxelles, supervisor of the coatings laboratory set up a job to be done in answer to a work request from a branch office. Records and growing files of pertinent data on completed projects are kept. Mr. Bruxelles also spends much of his time consulting with Hercules' customers on their particular coating problems.

A YEAR has elapsed since the Hercules Powder Co. set up a sales service laboratory for protective coatings. Its objective was to provide more and speedier technical service to Hercules' many customers in the protective coatings field. This service laboratory has a background of some 25 years of experience in the manufacture and sale of lacquer-type film formers such as nitrocellulose

Testing fast-dry lacquer primer (MIL-P-7962). Back in November 1952 the Product Coatings Laboratory completed tests on this primer. These included: 1. Hoffman scratch adhesion tests over clad aluminum and treated aluminum; 2. Flexibility 1/8-inch and conical mandrel; and 3. Tape test on panel soaked for a twenty-four hour period in water.

Zinc chromate lacquer primer (MIL-P-7962) is being tested for performance on aluminum. Frank Piech employs this testing device to record the weight needed to scratch off the coating which gives an accurate measure of the scratch hardness of adhesion of the lacquer. He has been working with chemistry of cellulosics for past 20 years.

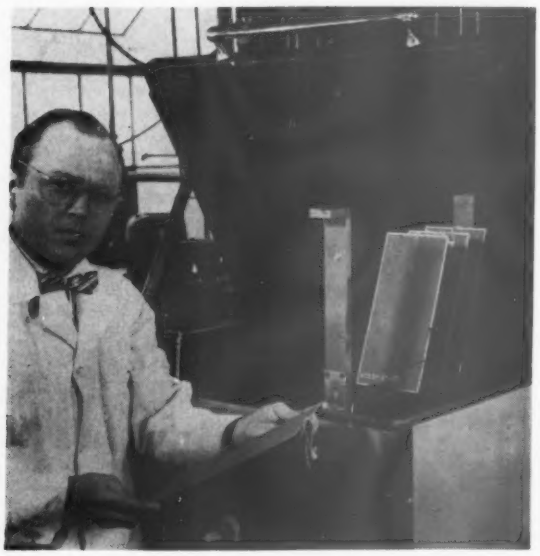
and its commercially newer relatives such as cellulose acetate, ethyl cellulose, and Parlon (chlorinated rubber).

During the first year, this special lab has been up to its ears every working moment. In addition to providing technical service to their customers on

High solids hot-spray furniture lacquer is applied by Harry Biddle in the spray booth, which is equipped with a waterfall for safety. The chest is being lacquered for display to a furniture factory representative interested in adopting a fast-drying lacquer system.

the manufacture and use of lacquer-type coatings of all types, Hercules technicians have made many trips to customers' plants to work with them at close range.

This laboratory undertakes only those problems



Chlorinated rubber (Parlon) paint problems are solved here. Salt-fog cabinet is used for testing resistance of paints to the toughest weathering. Dr. Paul Acton works on protective coating problems.

of a general nature—for example: discoloration of wood lacquers, stability of multicolor coatings, military specification lacquers, coatings for plastics, traffic paints, etc.

All problems receive careful consideration. Whether this lab will undertake the investigation of a particular problem depends on:

A. Potential for expansion of the market for fast air-drying finishes.

B. Time and cost factor for the investigation.

C. Will the results obtained contribute to a broad segment of the industry.

Solutions to all problems including results and recommendations are transmitted to all Hercules district offices for the purpose of providing each office complete information which may be of help in solving similar problems that may arise with customers in its particular area.

Filling aerosol dispensers with lacquer. An aerosol ethyl cellulose lacquer for hair dressing is being packaged by Herman Phillips (right) and Bill Gates. A project in this field resulted in development of a lacquer with less tack and was easier to remove by simple washing.

Work in Progress

Here is a rundown of work in progress at the coatings laboratory last month.

Nitrocellulose

Evaluation of silicone alkyds in exterior metal lacquers

Lacquers for reinforced plastics (polyester glass mats)

Topcoating aged enamel surfaces with hot lacquer

Protective colloids for nitrocellulose multicolor and texture finishes

One-coat hot-spray lacquer with good adhesion to untreated steel

Evaluation of Cycopol Resin 320-5 in nitrocellulose lacquers.

Aerosol applied lacquer primer for aluminum
Investigation of discoloration of blond furniture lacquers

David Lesser puts finishing touches on a promotional display panel illustrating texture and multicolor finishes on basswood, masonite, and paperboard surfaces. Customer interest is high on multicolored lacquers which are finding wide popular favor with customers today.

Ethyl Cellulose

Ethyl Cellulose gel lacquers for use as low temperature strippable coatings
Ethyl Cellulose lacquer emulsion for coating automobile tires
Flame spraying of ethyl cellulose hot-melt
Ethyl Cellulose lacquer for asphalt tile
Ethyl Cellulose hair lacquer

Panels go into baking oven. Carole Tweddle wears safety glasses and asbestos gloves which are standard safety precautions for employees in this part of the laboratory. Baking ovens are standard equipment.

Parlon

Resistance of Parlon-alkyd finish in salt-fog test
Formulation of a glossy red Parlon enamel

Cellulose Acetate

Ethyl Cellulose and/or Cellulose Acetate in flush off paint removers
Pigmented Cellulose Acetate lacquer for dip application to plastics.

Facilities

The sales service laboratory houses a constant temperature room where temperature is kept an even 77 degrees and humidity at 50%; spray booth equipped with a waterfall and the latest heating units for hot spray work; an equipment room containing a ball mill, baking ovens, sanding machine, fog cabinet, and other testing devices for specific problems; two offices; and the lacquer School Laboratory currently being used by 17 students attending Hercules Lacquer School which convened in May.

The sanding table. Here Bill Bacon uses this modern belt sander to prepare wood test panels of a project to improve cold-check resistance of furniture lacquer systems, a very important characteristic.

The building is headquarters for the group of eleven men and women working to provide technical assistance to Hercules' customers in the protective coatings industry. During the year 158 work requests were received.

Another interesting function of this sales service laboratory is the sponsoring of a lacquer school for young technologists in the protective coatings industry. This is an eight week course covering the fundamentals of lacquer and protective coating technology which consists of (1) laboratory work in which the student actually formulates coatings, applies and tests them; (2) lectures by technical representatives of the Hercules Powder Co. and other interested firms; and (3) plant trips.

North Dakota College Presents Beginner's and Advanced Paint Courses at Fargo

Beginner's Course

The beginner's course will be conducted for a 2-week period (June 21-July 2, 1954). There will be 20 lectures, lasting 75 minutes each covering the following:

1. Chemistry, modifications and usage of drying oils.
2. Occurrence, modifications and applications of resin, tall oil and natural resins.
3. Chemistry, properties and applications of synthetic resins, as phenolic, alkyd, urea, maleic, vinyl resins.
4. Miscellaneous film forming materials and their usages: cellulose nitrate and acetate, shellac, casein.
5. Composition, properties, and usage of white, colored and extender pigments.
6. Composition, properties, and usage of solvents, thinners and driers.
7. Discussions on varnish cooking and the various procedures used.
8. Pigment dispersion and discussions of many factors that influence same.
9. Principles of paint and varnish formulations.
10. Practical discussion of various means of paint and varnish applications.

There will be ten laboratory sessions of three hours each, covering the following:

1. Determinations of color and viscosity of various oils and treated oils; choice and influence of driers.
2. Preparation of varnishes from rosin and rosin derivatives; studies on the solubility of some natural resins in oils and solvents.
3. Student cooking of a 40-gallon ester gum varnish, a high grade spar varnish and preparation of an alkyd resin varnish.
4. Comparison of the above varnishes with regard to color, drying time, elongation, hardness, etc.
5. Grinding of a white enamel undercoater on a Hy-R-Speed mill.
6. Grinding of a white enamel on a single roller mill.
7. Grinding of a high quality trim paint on a triple roller mill.
8. Determination on the above paint of: Drying time, gloss, pounds per gallon value, hiding power, hardness, dry film thickness, wet film thickness, abrasion resistance, flexibility.
9. Preparation of a white baking finish in a pebble mill; preparation of a colored lacquer.
10. Applications of the various paints made, using a brush, dip coater and spray gun.

In addition, five evenings will be given over to film shows of two hours each, dealing with the manufacture of raw materials and paints, and the application of same.

No entrance requirements are needed for this course.

For complete details, write to North Dakota Agricultural College, Department of Paints, Varnishes and Lacquers, Fargo, N. D.

Advanced Refresher Course

Monday, July 12

9:30 a.m. *Chemistry of Drying Oils*, Dr. Wouter Bosch.

1:30 p.m. *Drying Oils, the Sinew of Paint*, D. S. Bolley, Baker Castor Oil Co., Bayonne, N. J.

8:00 p. m. *Hard Coatings Resins*, Dr. Wouter Bosch.

Tuesday, July 13

9:00 a.m. *Trends in Hard Resins*, Dr. H. A. Hoppens, Glendale-Plaskon Laboratory, Barrett Div., Allied Chemical & Dye Corp., Toledo, Ohio.

1:30 p.m. *Miscellaneous Resins*, Dr. Wouter Bosch.

Wednesday, July 14

9:00 a.m. *Alkyd Resins, What, How & Why*, F. G. Oswald, Hercules Powder Co., Wilmington, Del.

1:30 p.m. *Amine Coating Resins and Silicone Alkyds*, H. A. Hoppens.

Thursday, July 15

9:00 a.m. *Controlling the Atmosphere of Carbon Black Surfaces*, W. D. Schaeffer, Godfrey L. Cabot, Inc., Cambridge, Mass.

1:30 p.m. *Earth Colors—As Found and How Made and Iron Oxide Paint Pointers*, I. C. Clare, C. K. Williams & Co., Easton, Pa.

8:00 p.m. *Use of Epon Resins in Surface Coatings*, H. W. Howard, Shell Chemical Corp., Union, N. J.

Friday, July 16

9:00 a.m. *White Pigments: Their Properties and Functions in Paints*, L. P. Larson, American Zinc Sales Co., Columbus, Ohio.

1:30 p.m. *Story of Extender Pigments*, P. Wheeler, Edgar Bros., McIntyre, Ga.

8:00 p.m. *Dispersion and its Contributary Influence*, J. J. Taylor, Morehouse Industries, Los Angeles, Calif.

Monday, July 19

1:30 p.m. *Recent Latex Paint Developments*, N. R. Peterson, Dow Chemical Co., Midland, Mich.

Tuesday, July 20

9:00 a.m. *Role of Vinyl Monomers in Paint and Varnish Vehicles*, W. A. Henson, Dow Chemical Co., Midland, Mich.

1:30 p.m. *Recent Developments in Solvents for the Coatings Industry*, C. K. Fink, Mellon Institute (Union Carbide & Carbon Chemicals Co.), Pittsburgh, Pa.

8:00 p.m. *Vinyl Resins Widen the Markets for Coatings*, R. W. Quarles, Mellon Institute (Bakelite Co.), Pittsburgh, Pa.

Wednesday, July 21

9:00 a.m. *New Approaches to Drier Chemistry and Surface Active Agent*, C. Gardner, Advance Solvents and Chemicals Corp., New York, N. Y.

1:30 p.m. *Fundamentals of Nitrocellulose Lacquer Formulation, Cellulose Acetate and Ethyl Cellulose, Parlon*, W. P. Acton, Hercules Powder Co., Wilmington, Del.

8:00 p.m. *Plasticizing Cellulose Derivatives and Chlorinated Rubber, Latest Lacquer Developments*, W. P. Acton.

Thursday, July 22

9:00 a.m. *Pigments to Paint*, M. W. Hurdelbrink, Sherwin-Williams Co., Cleveland, Ohio.

1:30 p.m. *Realistic Paint Formulating*, C. R. Keefe, Glidden Co., Minneapolis, Minn.

Friday, July 23

9:00 a.m. *Literature; the Federation and the Association*, C. Homer Flynn, Ex. Sec., Federation of Paint and Varnish Production Clubs, Philadelphia, Pa.

1:30 p.m. *Questions and Answers.*

Entrance requirements for this course are two years of industrial paint experience; a B. S. in chemistry with one year of industrial experience or the successful completion of any of the beginner's paint courses conducted by the Department.

Lecturers at the Fourth Advanced Paint Refresher Course

W. P. Acton

Charles Gardner

F. G. Oswald

D. S. Bolley

W. A. Henson

N. R. Peterson

W. Bosch

H. A. Hoppens

R. W. Quarles

I. C. Clare

M. W. Hurdelbrink

W. D. Schaeffer

C. K. Fink

C. R. Keefe

J. J. Taylor

C. Homer Flynn

L. P. Larson

Peyton Wheeler

MAINTENANCE OF STEEL BALL MILLS AND PEBBLE MILLS

A SCIENTIFIC approach to the maintenance of steel ball mills and pebble mills in the paint industry is not new. However, the problem has been simplified in the last few years. New techniques have been developed and instruments which help predict future trouble in the mills are available. These methods now make a type of protective maintenance not previously possible. Maintenance problems in mills generally arise in a chronological order and are often related. The unusual may be encountered in new installations or relocations of a mill but many breakdowns are predictable until final retiring of the equipment. In order to clarify terms for a common meeting ground, the nomenclature given in Table I will be used.

Original Installation and Inspections

The first preventive maintenance steps must be taken at the time of the original installation but these items should be checked yearly.

FOUNDATIONS

The main support of the ball mill is generally either a concrete or steel base. See Figures 1 and 2. Yearly visual observations should be made to determine that the base is not cracked. Any movement or distortion will cause strains resulting in worn out gears and produce other part failures.

Vibration insulators similar to the Korfund Isorib material can be used between the ball mill base structure and the foundation to reduce the vibration transmitted from the mill to the foundation.

ALIGNMENT OF MILL

When the machine is first aligned, great care should be made that the pedestals are mounted level and on a common center line. This will permit the accurate placing of the bearings with respect to the gearhead drive. The pinion and ring gear must match within the close limits of the gear teeth or permanent damage will result on the first operation of the machine.

WATER SYSTEM

The water supply should be connected to the jacket system, with approximately ¾" water pipe and pressure limited to a maximum of

Table I. Nomenclature of ball mill parts.

MODERN BALL MILL PARTS

I. Cylinder
- A. Shell
  - 1. Integral Steel
  - 2. Alloy Steel Inserts
  - 3. Porcelain and Stone
- B. Water Jacket and Rotary Joint
- C. Lifter Bars

II. Trunnion Bearing
- A. Self-aligning Roller Bearing
- B. Plain Babbit

III. Drive
- A. Motoreducer
  - 1. Integral
  - 2. Base Mounted
- B. Reducer Coupling Motor Combination Gear
- C. Belt

IV. Pinion on Drive

V. Ring (Bull) Gear on Cylinder

VI. Pedestals
- A. Drive End
- B. Head End

VII. Foundations
- A. Steel Sub-Base
- B. Concrete Piers

VIII. Grinding Media
- A. Pebbles
- B. Porcelain
- C. Steel Balls

IX. Grinding and Discharge Doors

X. Vent or Sampling Plug

This article wa prepared by the engineering staff of the Epworth Manufacturing Co., Detroit, Mich.

4 pounds per square inch. Clean water with low mineral content or good stability is desired. The connection should be made in such a manner that the discharge is higher than the maximum height of the ball mill jacket; this will assure the water jacket being full of water at all times. *This is very important!* If the water is allowed to run out of half of the jacket while in operation it will tend to evaporate on the hot shell and excessive mineral deposits will form, thus contributing to clogging and scaling and ultimate failure of the system.

RUN-IN OF GEARS

The pinion and bull gear should be lubricated exactly as outlined on the instructions supplied with the mill. If the instructions are misplaced, the lubricant supplier can make recommendations for this heavy duty service. To check on the line-up of the gears, two methods are commonly used. (See Figure 3).

1) A small thin piece of solder should run through the mesh of the gear by inserting into the teeth of the pinion and bull gear. The pressure will crush the solder into the clearance between the gears and will permit accurate measurement and also show whether the gears are parallel.
2) A piece of blotting paper may be inserted between the flanks of the teeth and passed through the mesh. This will give an indication of the "push" of the gear and will be an aid to straightening of the gear set-up. These methods can be used to recheck the gears at any time to determine if the mill has shifted.

RETIGHTENING OF BOLTS

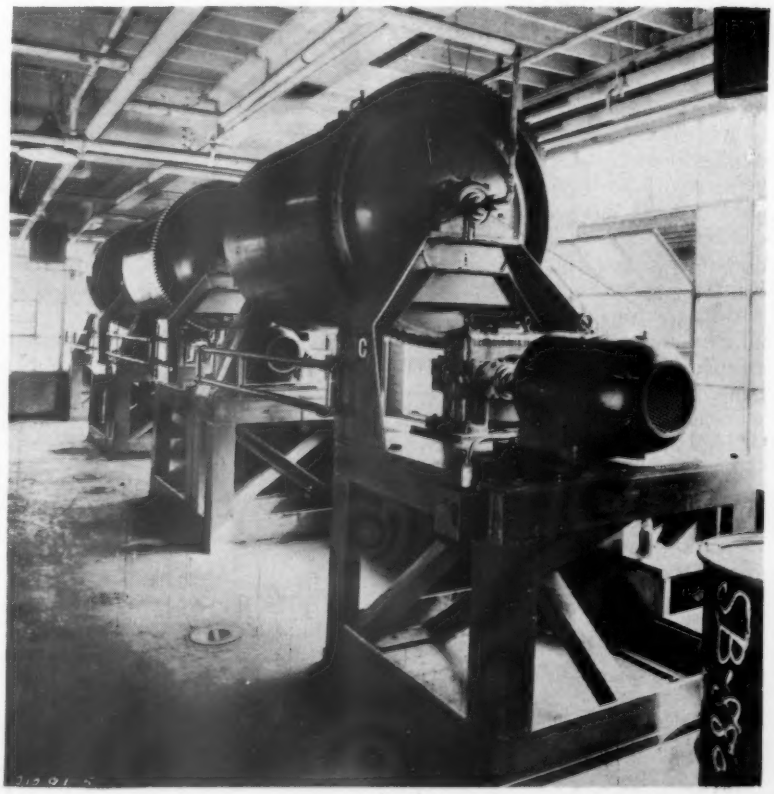
After the mill has been in operation for a short while, retightening of all bolts on the mill should be done. A ball or pebble mill is subjected to continuous vibration and this retightening of the bolts should be done at least once a year or as often as required.

ELECTRICAL SYSTEM

Electrical load checks should be made at the start of any installation and the amperage recorded along with the corresponding voltage. Once a year, the amperage

Figure 1. Steel ball mills on concrete bases.

Figure 2. Water-jacketed ball mills on steel sub-pedestals.



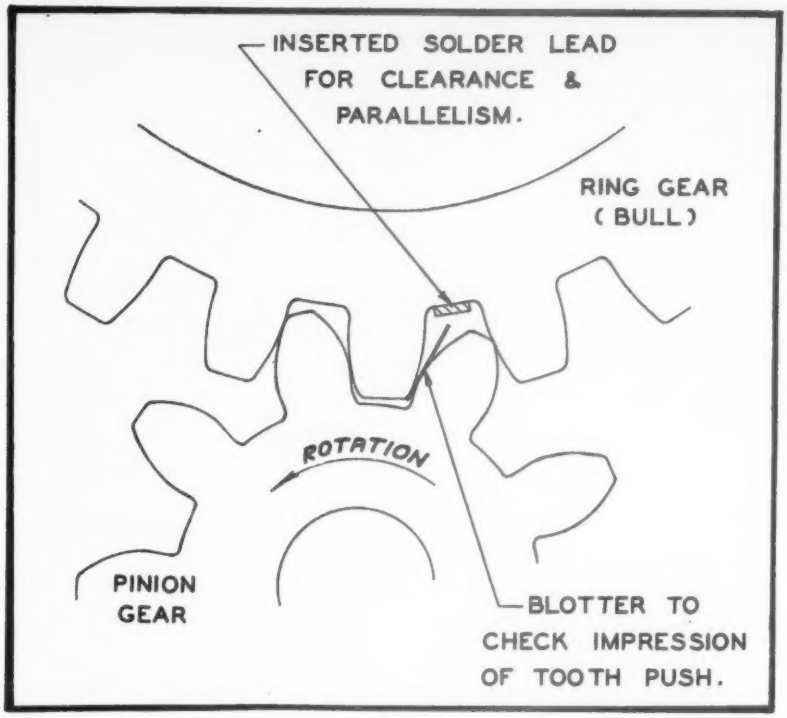


Figure 3. Diagram showing methods used to check line-up of gears.

and voltage should be checked against the original figures. Many times electrical troubles can be found before they cause failure by using this method as an added precaution.

OPERATION MAINTENANCE

Operational maintenance is maintenance which directly affects the production of a dispersing unit. Paint formulations have enough ramifications to encumber manufacture without the introduction of uncertain mechanical results. Any endeavor which reduces these uncertainties should be made. Holding the wearing functions in mills within certain limits is imperative so that the operation of a ball or pebble mill does not vary and consequently disturb production efficiency.

MILL CHARGE

The total charge of the grinding media must be set at a given percentage of total volume to give constant production efficiency. The limits should be set by the paint formulator so that he has some control of the situation. The steel ball or pebble charge should be checked periodically and kept within this range. Total weight of charge and approximate size of grinding media should be maintained. The media should not be permitted to become so small in size as to be affected by buoyancy and viscosity effects.

Table II shows the relative percentage of charge to total volume occupied in the mills, measured in inches from bottom.

LUBRICATION

Lubrication must be systematic and surveillance by the maintenance supervision should be very close. Some method of color coating for the alemite fittings and gears should be devised. Dynamic colors should denote daily, weekly, monthly, yearly lubrication. Many of the units on the mills require only occasional lubrication and color coding will eliminate over lubrication of parts. Excessive greasing is just as contributory to bearing failure as no grease. Damage to oil seals by excessive pressures can open the seal and permit foreign material to enter the housings.

CYLINDER ROTATION

The reversing of the ball mill cylinder rotation should be done every six months where possible. This will give improved action by the lifter bars because of even wear on both sides. The surveillance on these lifter bars should be closely adhered to as the cascading angle can be affected greatly by wearing. As the bars become smaller the wear will decrease the media angle and consequently, the maximum horsepower will not be utilized in the dispersion of the mix. Check with your ball mill manufacturer to determine if reversal is permissible to design.

LINING CHIPPING

The door and the vent plug opening should be checked for chipping. If chipping is found, have the paint formulator adjust the paint mix to a slightly higher consistency so as to lessen the grinding media impact on the lining.

DOOR REGISTRATION

The grinding door registration in the ball mill cylinder should be such that the gasket will position the door to give a continuous smooth surface on the inside of the cylinder. If the door registration is not correct there will be pocketing of the grinding media if the door is too high; or the door will project into the mill proper and be damaged by the grinding media.

LIFTER BAR REPLACEMENT

The welding of new lifter bars to mills has been made a common practice. The usual procedure is to weld an alloy steel bar in the ball mill approximately 6" away from the worn bar. This can be done on location on week-ends after the building and surrounding

(*Turn to page 49*)

Table II. Relative percentage of charge to total volume in the mill, measures in inches from bottom.

Mill I.D.	15%	25%	33 1/3%	50%
24	5 1/4	7 1/4	8 7/8	12
30	6 1/2	8 3/4	11 1/8	15
36	7 7/8	10 7/8	13 3/8	18
42	9 1/4	12 3/4	15 5/8	21
48	10 1/2	14 1/2	17 3/4	24
60	13 1/8	18 1/8	22 1/4	30
72	15 3/4	21 3/4	26 5/8	36

HANDLING HOT VARNISH

PUMP SERVICES THREE KETTLES

Problem

Sun Chemical produces an all-purpose varnish for Fuchs and Lang Manufacturing Co. in its Rutherford installation.

The varnish is cooked in batches in three kettles. Pumping is required to move each batch from the kettle to the portable vat used to transport the varnish to the canning room. This varnish has a viscosity of 150 SSU at 500 degrees F., and thickens to 1500 SSU at ambient temperatures.

Sun Chemical used both compressed air and gear pumps for this job. Both proved unsatisfactory. The presence of compressed air together with volatile inflammable solvents resulted in a highly dangerous situation. While gear pumps solved the danger problem, they produced a very unsatisfactory kneading or squeezing action on the fresh varnish, and also showed some cavitation in the suction line. Use of both compressed air and gear pumps resulted in leakage.

Solution

A 40-AXMO model (manufactured by Yale & Towne) iron fitted pump powered by a drip proof motor was the solution to the problem, according to the manufacturer. The motor, a three horse power, three phase, 60 cycle, 220/440-volt unit, operates at 1750 rpm to drive the pump, through reduction gears, at 350 rpm. Displacement is said to be about 25 gallons per minute.

This "Tri-Rotor" pump unit is mounted on a dolly so that it can service each of the cooking kettles in turn. A conventional across-the-line motor control is suspended on one side of the dolly. A coarse Y strainer on the input pipe and two gate valves on the output complete the hardware. Lengths of two-inch neoprene hose coupled to the input pipe permit easy control of varnish flow.

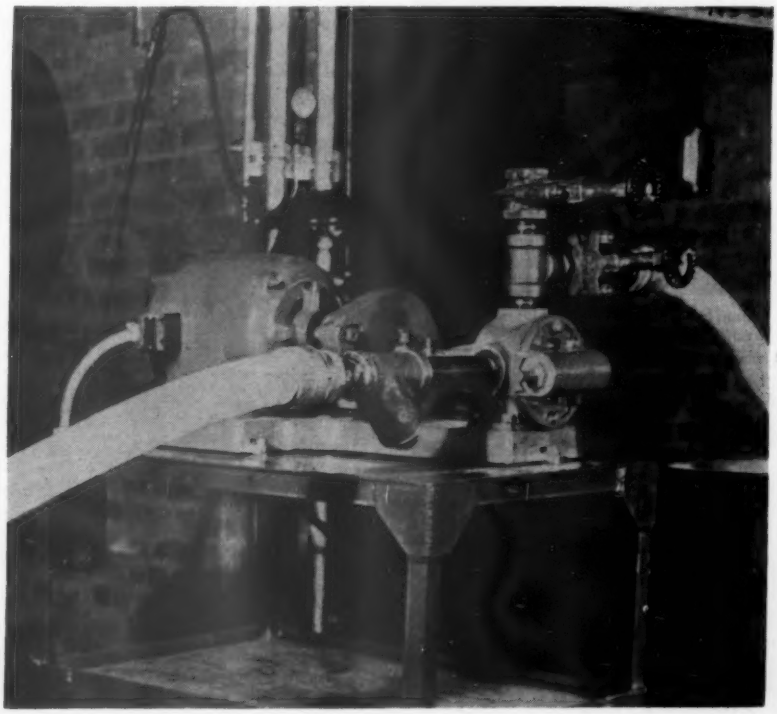
For high temperature operation, the pump is equipped with an asbestos-base gasket and asbestos packing.

Six additional "Tri-Rotor" pumps, on fixed mounts, are used by Sun Chemical for tank to tank transfer of similar varnish after it has cooled down.

Results

The manufacturer claims: (1) there is no squeezing or kneading of the product and a minimum of pulsation; (2) there is no cavitation; (3) the long shaft housing has eliminated leakage; (4) the suction remains excellent; and (5) this unit has operated for 6 years without a breakdown for repairs.

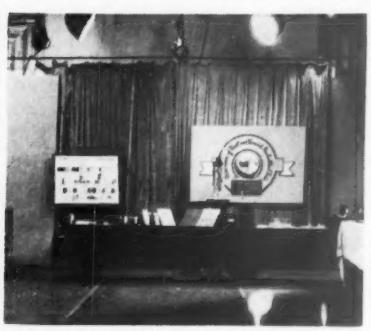
Pump coupled to a 3 horsepower motor handles hot varnish at the Fuchs & Lang Mfg. Company, division of the General Printing Ink Company.



OPPORTUNITIES IN COATINGS INDUSTRY SPOTLIGHTED IN CLEVELAND TV SHOW

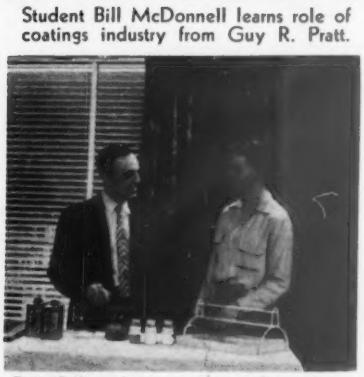
On April 11th the Cleveland Paint and Varnish Production Club presented what is believed to have been the first television show ever produced by a Production Club. The half hour show was telecast by WNBK, channel 4 in Cleveland, Ohio.

The program was one in a series sponsored by the Cleveland Technical Societies Council and was intended to give students at the high school level a comprehensive picture of the many opportunities in the coatings industry.



General view of studio in which "Search For Perfection" TV show was produced.

Student Bill McDonnell learns role of coatings industry from Guy R. Pratt.



Bob Hall explains engineering know-how needed to process materials into paint.

In brief review, the program opened with a commentary by announcer Paul Bedford of the WNBK staff reviewing the remarkable changes an island castaway of 30 years would find in returning to present day mode of living. Many of these changes are intimately and inevitably related to the research productivity of the coatings industry.

Student Bill McDonnell then approaches Guy Pratt, who is busily engaged in his basement workshop, for some paint needed in a school project. This leads to a discussion which brings out the point that paints are not necessarily universal but often are specific in their application and that this happens to be the sphere of protective coatings scientists.

Pratt then takes the student to a hypothetical paint plant where he learns from Gene Ott of the varied and often romantic sources of the materials that are used in the modern vehicles. Bill Tomc discusses the decorative and protective features of pigments. Bob Hall tells of the engineering know-how needed to process these modern materials into paint the student had considered so commonplace.

Finally, the student is taken to Dr. Weaver who briefs him on the many opportunities not only in the physical sciences but also in the business fields of the coatings industry. The student goes home with a copy of the NPVLA booklet, "Your Brightest Tomorrow Is In The Paint, Varnish and Lacquer Industry" to consider his personal opportunities.

The unique continuity was written by Dr. E. G. Bobalek of The Case Institute of Technology and carries the title "Search For Perfection". The principals were G. R. Pratt, of Continental Products Company; R. F. Hall of Paint Division of United Co-operatives, Inc.; E. H. Ott, of Ferbert Schorndorfer Company; W. M. Tomc, of Acorn Refining Company; Dr. J. C. Weaver, of Sherwin Williams Company, and student W. McDonnell, a senior at West High School in Cleveland.

The project was an undertaking of the Educational Committee of the Cleveland Paint and Varnish Production Club. Further details are available from chairman R. F. Hall.

In hypothetical paint plant Gene Ott describes sources of vehicle materials.

Decorative and protective features of pigments are explained by Bill Tomc

Career opportunities in the coatings industry are outlined by Dr. J. C. Weaver

News of Paint and Varnish Production Club Meetings

New York

The Technical Committee of the New York Paint and Varnish Production Club held its monthly meeting on April 15th. A total of 49 members and guests were present.

Quite a few new guests were introduced to the group. Most of these men are going to be active in the new subcommittee studying "Effect of Ultraviolet Light on Properties of Lacquer Films."

All subcommittee chairmen were requested to report at the next meeting whether or not they will have a paper ready for the Convention this Fall. These papers must be submitted to the Federation by August 15th.

Stanley H. Richardson reported on his committee's "Investigation of Methods for Measuring Drying Time." The group is in the process of preparing a paper describing their results comparing various methods of testing tack free time using the same styrenated alkyd.

E. G. Shur described the latest results of his committee's work on "Evaporation Rate of Solvents." Thus far the group has standardized on a volumetric method using a conical tube based on the Wetlaufer and Gregory method. Suggestions were offered that a continuous weight measurement might be more accurate and most likely necessary in the future work on evaporation of solvents from pigmented coatings.

The work of the committee studying "Matching Color in Production" was discussed by S. Leonard Davidson. His group has been attempting to secure or develop a low cost accurate and dependable light source for matching colors. They have studied recommendations by Binney and Smith, Calco, Macbeth and General Electric. A combination of one 60 watt incandescent and two 40 watt fluorescent lamps—all white—appears to give good results and has been checked in two plants. A single or double group is used depending on the intensity required. Also, they suggest a neutral gray background equal to Munsell 5 for the color matching area.

The Philadelphia Technical Committee is working on a similar project and will be contacted to prevent duplication.

George S. Cook reported on the activities of his committee on "Literature and Discussion". He submitted a bibliography of recent significant technical articles, copies of which will be sent to all members of the Technical Committee and suggested a future discussion on "Aereosol Paints." This meeting will be arranged in the near future.

S. Leonard Davidson suggested that "Seeding in Enamels" should be a subject for discussion by the committee. Due to lack of time this subject was tabled until the next meeting.

The feature of the evening was a talk presented by Ken Tator on the "Performance Testing of Industrial Maintenance Paints." Mr. Tator's group has developed an exposure panel, which gives more accurate results than the flat panel used by most laboratories. These panels are made to include all possible conditions namely, flat surfaces, sharp edges, welds, wild spatter, crevices, pits, water pockets, scratch injuries. The painted panels exposed under actual plant conditions show failures at sharp edges, for example, long before any breakdown is noted on the flat area. He stressed the points that proper surface preparation and paint application to a minimum film thickness over all areas is extremely important even for the highest quality coating.

Three hundred and fifty members and guests attended the New York Paint and Varnish Production Club at its regular meeting May 6, 1954, at the Brass Rail Restaurant in New York City. The meeting was preceded by a Cocktail Hour to welcome the Federation Council Representatives, in New York to attend the Spring Council meeting. Other highlights included the visit of the Federation Officers, the election of the New York Club Officers, a talk by James W. Raynolds of General Electric on "Future Demands on the Paint Industry" and a presentation of the PaVaC honor awards.

Dr. Raymond Kirk, Chairman of the Mattiello Memorial Committee presented a brief resume of the history of the Mattiello collection and its present status.

A brief resume of the aims and functions of the New York Club Technical Committee was presented by Anthony Skett, Chairman.

The nominating committee, with William Greco as chairman, proposed the slate of officers for the coming year which was accepted by the membership. President Santoro then introduced the new officers, John Congleton of Maas & Waldstein Co. to be President; Irving Flaumenhaft of Lacquer and Chemical Corporation, Vice-President; Ernest S. Paterno of Technical Color and Chemical Works, Secretary; and Francis Rogers of Adco Chemical Co., Treasurer.

The PaVaC awards were presented by President Santoro to members of three related industries. C. A. Aloia of the Printing Ink Industry, Carl L. Engelhardt of the Paint Industry and Louis J. Venuto of the Carbon Black Industry. Before each presentation the associate of each man to receive the award was asked to review briefly the accomplishments of his co-worker.

Carl Overmyer, President of the Federation of Paint and Varnish Production Clubs, commented briefly on Federation affairs, noting in particular that this was the last year of the joint convention meetings with the Association and the reasons for the separate affairs. Carl also related some experiences he had on the recent trip he and Mrs. Overmyer made to the 25th Anniversary of the founding of The Birmingham Paint, Varnish and Lacquer Club in England.

John Congleton, Chairman of the Program Committee then introduced Mr. James W. Raynolds, Marketing Manager of the General Electric Co.

"Future Demands on the Paint Industry" by Mr. Raynolds is an attempt to analyse the immediate and

(*Turn to page 74*)

Recipients of 1954 PaVaC honor awards: (l to r) C. L. Engelhardt, C. A. Aloia, L. J. Venuto.

Just 28 words

to tell our steel container story

Colorfully lithographed, Continental steel containers become an integral part of your package family. When emptied and put to other uses, they continue to sell your name and product.

TAILOR-MADE PACKAGE SERVICE

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
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Organic Coating Conference Slated For July 12-16, In N. Hampshire

Organic coatings sessions, scheduled July 12-16, will be included in the Gordon Research Conferences for 1954, to be held from June 15 to September 1, at the New Hampton School, New Hampton, New Hampshire.

The Conferences, sponsored by the American Association for the Advancement of Science, were established to stimulate research in universities, research foundations and industrial laboratories.

Attendance at each Conference is limited to 100. Each applicant must state the institution or company with which he is connected and the type of work in which he is most interested.

Requests for attendance at the Conference, or any other additional information should be sent to W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston, R. I.

L. E. Hoag will be chairman and L. A. Melsheimer, vice chairman.

Monday, June 12

Coatings from Furanes, R. B. Seymour.

Formulation and Properties of Polyvinyl Acetate Emulsion Paints, R. D. Emmick.

Application of the Solubility Parameter Concept to Film Forming Materials, H. Burrell.

Tuesday, June 13

Correlation of Film Properties with Composition, R. Buchdakl.

Coatings from Butadiene Polymers, James A. Shotton.

Wednesday, June 14

Organic Coatings for Cathodically Protected Metals, R. B. Brand

Coatings from Polyurethanes and Related Polymers, J. H. Saunders or H. L. Heiss.

Thursday, July 15

Effect of Irradiation on Polyethylene Coatings, Q. P. Cole.

Fundamental Properties of Polymer Latices, T. Alfrey and J. Vanderhoff.

Electrical and Thermodynamic Factors Related to the Adhesion of Organic Coatings, S. M. Skinner.

Friday, July 16

Fundamental Studies into the Durability of Baked Synthetic Enamels, S. Gusman.

Devoe & Raynolds Co. Acquires Hart and Burns of West Coast

Devoe & Raynolds, Inc., announced that it had acquired through stock purchase Hart and Burns, Inc., located in Riverside, California. J. W. Bornhauser, president of the Jones-Dabney industrial, marine, resins and chemicals division of Devoe, said that J. Mack Creager, 44, until now a vice president of Jones-Dabney, will be president of Hart and Burns. Continuing as vice presidents of the California firm will be Arthur E. Burns, Jr., and Earl Huston, Jr.

Hart and Burns will continue manufacturing and selling their Durahart and Navicote brands of industrial and marine coatings with which the concern has been identified since it was founded in 1946. Hart and Burns' 32,000 square feet of plant floor space will also provide manufacturing facilities for Jones-Dabney's automotive and industrial finishes. West Coast marketing of Jones-Dabney products will now be undertaken on a wide scale.

The purchase by Devoe of Hart and Burns includes the five acres on which the plant, laboratory and office, together with railroad spur, are situated.

ASTM Annual Meeting To Be Held in Chicago, June 13-18

The 1954 ASTM Annual Meeting will be held in Chicago during the period June 13-18, and on Tuesday afternoon, June 15, at the Hotel Sherman, Mr. Templin will deliver the H. W. Gillett Lecture.

Richard L. Templin, assistant director of research and chief engineer of tests, Aluminum Company of America, will present the third H. W. Gillett Memorial Lecture. Mr. Templin has selected the subject "Fatigue of Aluminum."

This lecture—first presented in 1952 at the Fiftieth Anniversary Meeting of the ASTM—is jointly sponsored by the American Society for Testing Materials and Battelle Memorial Institute. It commemorates Horace W. Gillett, one of America's leading technologists and metallurgists and the first Director of Battelle. Each year it will cover subjects pertaining to the development, testing, evaluation, and application of metals.

Harold F. Dodge, Quality Results Engineer and Member of the Technical Staff, Bell Telephone Laboratories, Inc., will present the 28th Edgar Marburg Lecture on the subject "Interpretation of Engineering Data", June 16th.

Many new and interesting pieces of scientific and testing equipment will feature the Eleventh Exhibit of Testing and Scientific Apparatus and Laboratory Supplies, during the current Annual Meeting of the American Society for Testing Materials. Leading manufacturers and distributors of instruments and laboratory supplies will emphasize the continued progress being made in providing research and testing engineers with suitable facilities for evaluating the properties of all kinds of materials.

•

Appointed Western N. Y. Representative for PICCO

James O. Meyer & Sons have been appointed western New York representatives, according to an announcement from Pennsylvania Industrial Chemical Corporation, Clairton, Pa.

The Meyer Company, which will specialize in the sale of synthetic resins, solvents and solvent oils to the paint industry, has headquarters at 701 Seneca St., Buffalo, N. Y.

•

American Chemical Paint Company Sets Up Two 4-year Scholarships

The American Chemical Paint Company announces that it has set up two four-year scholarships to be presented to graduates of Ambler Pa., Joint High School. One scholarship will be for study in the field of chemistry or chemical engineering. They will be presented at the annual Commencement exercises.

M. B. Sweet Co. Appointed as Morehouse Representatives

Morehouse Industries announces the appointment of M. B. Sweet Co., Chicago, as sales and service representatives for northern Illinois and Wisconsin. The Sweet Co. is headed by Merle B. Sweet and Julius A. Baggiani, partners. Mr. Baggiani will be in sole charge of the Morehouse interests, and recently received factory training in the operation, maintenance and use of Morehouse mills. He was ormerly vice-president and sales manager of Philip E. Calo Co., Chicago, Ill. His experience includes control of varnish manufacture, production control and research work.

J. A. Baggiani

•

Eight Science Students Get $1,000 Atlas Scholarships

Eight top chemistry, engineering and physics students have been awarded $1,000 Atlas Powder Company senior year college scholarships, according to an announcement by Ralph K. Gottshall, President.

The award winners are: Royal G. Albridge, Jr., Ohio State; Ronald F. Cieciuch, Yale; Richard W. Ehrhorn, University of Minnesota; Ralph W. Hamilton, Lehigh; Everett T. McDonel, Case Institute; Lois M. McKay, University of Delaware; Charles M. Mohr, M.I.T.; and Albert Oleniczak, Drexel Institute.

Winners will also have the opportunity to gain practical experience during the summer by employment in one of Atlas' explosives, chemicals, activated carbon or industrial finishes plants, or in its research laboratories.

•

Synkoloid Opens Warehouses In Atlanta and Ft. Wayne

The Synkoloid Company, water paint manufacturers of Dallas and Los Angeles, have announced the opening of two new warehouses located in Atlanta, Georgia and in Fort Wayne, Indiana. The Atlanta operation will be managed by Mr. Wyly Doty.

Synkoloid's Fort Wayne operation will be under Mr. Stanley Harper.

Chemical Engineering Symposium Will Feature Canadian Conference

With the rapid expansion of the chemical industry in Canada, this is an opportune time to consider the present position of the industry and of the engineers who are largely responsible for its growth and operation. At least the Chemical Engineering Division of The Chemical Institute of Canada thinks so and accordingly has arranged a symposium on that subject. Wide interest is expected in this symposium which will take place at the 37th Annual Conference and Exhibition of the Institute to be held at the Royal York Hotel, Toronto, June 21, 22, 23.

In the symposium on the chemical engineer in Canada, J. R. Donald, president of a well-known Montreal firm of consulting chemical engineers, will consider the factors of future growth. R. R. McLaughlin and A. C. Plewes, heads of the Departments of Chemical Engineering at Toronto and Queen's, will discuss the university training of Canadian chemical engineers. Finally, D. S. Simmons, assistant general manager of refineries, Imperial Oil Limited, will consider the mutual responsibilities of Canadian industry and its engineers.

A second feature of the chemical engineering program will be a unit operations session. This session is concerned with recent developments in equipment for chemical manufacturing, and the key speaker will be Max Leva, well-known American consultant who will discuss his special field, packed towers for distillation, gas absorption, and extraction. A feature of this meeting will be the showing of movies on bubble cap distillation column operation by S. A. Guerrieri of the Arthur G. McKee Company.

Winding up the program for the chemical engineers will be a unit processes session.

•

Glidden Purchases Assets of Mound City Paint, St. Louis

Purchase of assets of the Mound City Paint & Color Co. of St. Louis by the Glidden Company was announced recently by Adrian D. Joyce, Glidden board chairman.

Mr. Joyce said the acquisition included all accounts and notes receivable, inventories, raw materials, and finished products, and the sales and distributing staff of Mound City Paint & Color Division of the Glidden Company.

Mound City paints will be manufactured by the Glidden Company in its modern and complete plants at St. Louis and New Orleans. A warehouse at Dallas will continue to serve the wide distribution in that area.

O'Brien Corp. Establishes Scholarship at Notre Dame

A scholarship in the departments of chemistry and chemical engineering of the University of Notre Dame has been established by the O'Brien Corporation, South Bend, Ind. paint manufacturer, it was announced recently by the Rev. Theodore M. Hesburgh, C.S.C., university president.

Founded in memory of the late Jerome J. Crowley, Sr., Chairman of the Board at O'Brien, the grant provides for a two-year full tuition scholarship for a student majoring in chemistry or chemical engineering. The recipient of the new scholarship will be announced in June. Earlier, the O'Brien Corporation established scholarships in memory of Patrick O'Brien, founder of the company, and George L. O'Brien, a former president.

Juniors who have demonstrated an interest in paint technology will be eligible for the scholarship. The recipient must be willing to work as a trainee in the O'Brien Corporation laboratories during the Summer vacations between his sophomore and junior, and senior years. However, there is no obligation to work for the company after graduation.

The winner of the O'Brien scholarship will be chosen by the heads of the chemistry and chemical engineering departments and the University Scholarship Committee. Selection will be based on interest in paint technology, scholastic record, leadership qualities and need for financial assistance.

In establishing the scholarship, Jerome J. Crowley, Jr., president of The O'Brien Corporation, said: "Here at O'Brien's, we recognize the paint industry's need for young men trained in the fundamentals of chemistry. Last year, the industry had total sales of nearly one and a half billion dollars and is growing steadily. In recent years, it has become part and parcel of the fast-changing, highly technical plastics industry. We hope that this program will be sufficiently successful to encourage other paint manufacturers to establish similar scholarships."

•

Witco Opens Factory and Lab. in Worcestershire, England

Witco Chemical Co., Ltd., London, subsidiary of Witco Chemical Co., New York, has opened a factory and technical research laboratory at Droitwich, Worcestershire, England.

The modern plant will manufacture synthetic latex compounds at the outset, and ultimately will produce the same chemicals as the parent company, to serve the trade in Britain and on the continent. In charge are D. Roberts and J. McHugh.

NEWS DIGEST

H. B. Almond of McCloskey Retires after 34 Years' Service

H. B. Almond, formerly vice-president and director of sales of McCloskey Varnish Co., Philadelphia, Pa., retired from business recently. For the past six months he has served in an advisory capacity.

H. B. Almond

His career in the paint industry began almost 50 years ago with Pratt & Lambert Co. He joined McCloskey in 1920, was made vice-president in 1921, director of sales in 1929, and a member of the Board of Directors in 1934.

•

Polytechnic Institute of Brooklyn Acquires Facilities for Growth

As a major step toward consolidating its rapid growth, the Polytechnic Institute of Brooklyn recently contracted to purchase for $2,000,000 the eight-story, block-long plant building of the American Safety Razor Corporation in downtown Brooklyn.

The building fronts on Brooklyn's $80,000,000 Civic Center and is opposite the site of the handsome Supreme Court Building soon to be erected.

Dr. Harry S. Rogers, president of the century-old Institute, declared that acquisition of the building, located on Jay Street between Johnson Street and Myrtle Avenue, will enable Polytechnic to bring its widely dispersed facilities together in one suitable modern structure.

He stressed the excellent location of the building, situated at the hub of all transit lines converging upon downtown Brooklyn. The new site will be even more accessible than Poly's present location, which is particularly important for its many evening students employed in industry throughout the New York metropolitan area.

•

D. H. Litter Named Eastern Agent for Crownoil Chemical

D. H. Litter Co., Inc., New York and Boston, have been appointed exclusive Eastern Sales Agents of Crownoil Chemical Company, Long Island City, for the sale of processed oils, resins and specialties.

J. Harold Kolseth, left, vice president in charge of All Trade Sales of Devoe & Raynolds Co., Inc., receives award for his company's "continuous adherence to the brand names system of distribution since 1754" from Barry T. Leithead, head of Brand Names Foundation.

Goodyear Reclassifies Latex Name Designations

Two latices listed in the Chemigum group have been reclassified under the Pliolite series, according to an announcement by The Goodyear Tire & Rubber Company's Chemical Division.

Chemigum Latex 101A and Chemigum Latex 101 AX are now designated as Pliolite Latex 101A and Pliolite Latex 101AX.

All Goodyear Chemical Division latices now conform to the following system of nomenclature:

Pliolite Latices designate only styrene-butadiene types; Chemigum Latices designate only butadiene-acrylonitrile types.

H. W. Dell of Glidden Succumbs Unexpectedly

Humphrey W. Dell, assistant to the technical director of The Glidden Company's paint and varnish division, Cleveland, died unexpectedly, at 49.

A native of St. Louis, where he was graduated from Washington University in 1925 with a bachelor's degree in chemical engineering, Mr. Dell was a veteran of 29 years with The Glidden Company. During his career, he achieved a reputation for his work in standardizing Glidden raw materials and finished paint products.

Mr. Dell was a past president of the Cleveland Paint and Varnish Production Club.

A. C. Horn Company, Division of Sun Chemical Corporation, recently held the second in a series of monthly seminars on paint technology for its salesmen and laboratory technicians. Group photograph includes Dr. W. G. Vannoy, E. I. DuPont de Nemours & Co., sixth from right, front row, who spoke on latest developments in paint for exterior wood surfaces.

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Kauri Butanol Number.....26

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Morehouse Appoints M. H. Baker as Minnesota Representative.

M. H. Baker Co., Minneapolis, Minn., has been appointed as representative of Morehouse Industries for that state.

The Baker Company supplies soybean oil, fatty acids and resins to the paint, plastics and allied trades, and was founded in 1951.

The new connection assures quick delivery and service for Morehouse equipment, according to the company.

•

Martino, Nat'l Lead President, Now Chairman, Metals Div., C.A.I.

Joseph A. Martino, president of National Lead Company, has accepted the chairmanship of the Metals Division of the Committee of American Industry, according to an announcement from Colby M. Chester, Chairman of CAI. Mr. Martino and his committee will canvass the non-ferrous segment of the metals field in behalf of the National Fund for Medical Education.

D. C. Arnold

New Officers Elected By N. Y. Paint, Varnish & Lacquer Assoc.

The New York Paint, Varnish and Lacquer Association held its 67th Annual Meeting May 5th at the Biltmore Hotel. Some 450 members and guests attended the meeting, at which Douglas C. Arnold, President of the Keystone Paint and Varnish Corp., was elected President of the Association.

Others elected to office were: Carl Iddings, vice-president; Frank E. Bollway, Jr., Secretary, and Benjamin Farber, Treasurer.

Retiring president Clarence W. Slocum paid special tribute to the outgoing officers for their support and cooperation during the past year. Mr. Slocum himself, presented with a scroll for his services as president, was commended for his efforts in the field of legislation pertinent to the paint industry by National Association President Joseph F. Battley, who attended the meeting.

In his acceptance speech, Mr. Arnold told the Association that the tremendous growth of the "do-it-yourself" movement has made the paint and varnish industry "virtually depression-proof." Citing instances where unemployment in specific areas has actually resulted in a marked increase in paint sales, he noted that the average American has learned to do all kinds of home repair work with "remarkable proficiency—a skill that will stand him in good stead in the event of curtailed income."

Mr. Arnold was one of the first three chemists to enter the paint industry in 1908 to develop organized research.

•

G. M. Curry to Handle Landers-Segal Colors

G. M. Curry of 4441 Garfield Ave So., Minneapolis 9, Minn. will handle the sale of Landers-Segal dry colors for the state of Minnesota to paint and other manufactures as well as firm's line of LANSCO packaged dry colors, minerals, chemicals, aniline colors, and limeproof cement colors to wholesale and retail paint dealers.

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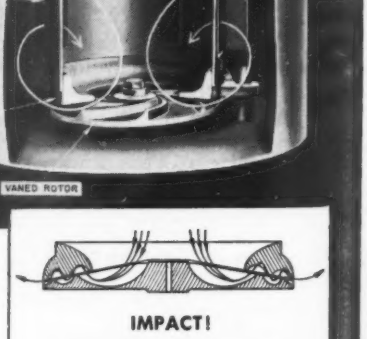

The complete story is in Catalog 68. Write for a copy.

Note the combined impact and shear of the rotor-stator phase of this mixer, added to the vigorous turbulent mixing action. That's why it's the best mixer available for latex-based paints . . . and any other fluid mixing operation where break-up of lumps and air bubbles is important!

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L. J. La Cava, Continental Can Sales Manager, Retires

Lawrence J. La Cava, sales manager for special accounts, has retired, according to an announcement of the company. He began his career with the company in 1920 as salesman for general line cans in the New York City district. Mr. La Cava held his last position for 10 years, contacting some of the company's largest can customers in such fields as oil, paint, food, beer and industrial alcohol.

L. J. La Cava

•

Jones-Dabney Research Lab Dedicated in Louisville, Ky.

The $500,000 research laboratory of the Jones-Dabney division of Devoe & Raynolds Company, Inc , was formally dedicated in Louisville, Kentucky, last month.

The Louisville laboratory will be the research center for Devoe's eight plants and laboratories reaching from coast to coast. New product research will be conducted principally at Louisville while the Company's other laboratories will concentrate on product development and quality control.

Although the search for better products continued through the years, the Company's modernized research program was initiated during the depth of the depression in the early 1930's. At that time, when industry in general was concerned mostly with retrenchment, Devoe launched an annual $250,000 research program, the budget for which has recently been increased to $1,000,000 each year.

The Louisville laboratory interior has been scientifically painted in varied colors to give employees and visitors a "change-of-eye pace" with warm light buffs and cool light greens. In those parts of the building where accurate color determinations are made neutral grays have been used. Other rooms in which high temperatures are maintained for certain experiments have been painted in cool blues which drop the temperature psychologically so that the interiors have the appearance of being cooler than they are.

Koppers To Manufacture Poly-Ethylene At Port Arthur, Tex.

Selection of Port Arthur, Texas, as the site for the new plant of Koppers Company, Inc., to produce polyethylene plastic was recently announced by George M. Walker, vice president and general manager of the Company's chemical division.

At Port Arthur, Koppers will purchase ethylene gas from new ethylene facilities being constructed at the nearby refinery of Gulf Oil Corp.

Koppers' new polyethylene plant will be located on a portion of 1,000-acre site purchased several years ago. Early in 1953 the Company placed in full production at this site an installation which produces ethylbenzene, an intermediate in the production of styrene, used in making polystyrene plastics and synthetic rubber.

Atlas German Affiliate to Market Emulsifiers in Europe

A new German emulsifier company, Atlas-Goldschmidt, G.m.b.H., has been formed jointly by Atlas Powder Company and Th. Goldschmidt, A.-G., of Essen, according to Ralph K. Gottshall, Atlas president.

Beginning July 1, the new enterprise will undertake a broad program of product research and development, and will market surface active agents and emulsifiers throughout Europe.

•

American Oil Chemists Set Fall Meeting October 11-13

The American Oil Chemists' Society will hold its 28th fall meeting October 11-13 at the Radisson Hotel, Minneapolis. Harold Wittcoff of General Mills will be program chairman.

COATINGS LABORATORY MARKS FIRST ANNIVERSARY

FOG CABINET—Test panels of a Parlon® (chlorinated rubber) coating are exposed to high humidities. In this way, Hercules is helping its customers solve problems encountered in actual service.

Equipped with the most modern facilities available, Hercules' protective coatings laboratory for product research and evaluation has completed a year in Hercules' customer service.

Research in nitrocellulose, ethyl cellulose, cellulose acetate, and chlorinated rubber has been expanded to help you. Coupled with the availability of technical representatives to visit your plant, the protective coatings laboratory can supply you with a wealth of data on the properties and performance of Hercules' materials.

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Phosphate Treatments Discussed At Steel Container Symposium

The evaluation of phosphate treatments of steel shipping containers to achieve the objectives of better surface for application of exterior and interior coatings and interior cleanliness of containers was considered at a recent symposium sponsored by the Steel Shipping Container Institute, Inc.

The symposium, held at Battelle Memorial Institute, is the second one of its kind, and is part of a wide industry research program embracing problems such as metal surface preparation, methods of lining application and development of new lining formulas for the purpose of inhibiting container corrosion and preventing product contamination to provide the best packaging for the constantly increasing quantity of hard-to-package products.

Attending the symposium in addition to container manufacturers were phosphating and coating manufacturers, representatives of the principal industries using steel containers—chemical, petroleum, paint, varnish and lacquer and food industries—the several branches of the Armed Services and the trade press.

Pretreatment studies underway since 1948 for the Steel Shipping Container Institute were reviewed by members of the Steel Shipping Container industry and Battelle Memorial Institute and phosphating and coating manufacturers reported on recent developments in their field.

•

Cleveland Ass'n. Hears Talk on Sales Training

Kenneth Lawyer, professor of marketing at Western Reserve University, discussed methods for achieving maximum efficiencies in sales training at a dinner meeting of the Cleveland Paint, Varnish and Lacquer Association, April 22 at Hotel Carter.

His address included findings gained from his recently-completed study of the sales training programs of more than 250 industrial concerns and how these findings could be applied to measure the strength of sales training programs in the paint and varnish industry.

Professor Lawyer, who is completing his 10th year in the marketing department of Western Reserve, received his Ph.D. degree in marketing from the University of Pittsburgh.

Parker Rust Proof Co. Expands Maywood, Cal., Plant

A major expansion, the third within four years, is underway at the Parker Rust Proof Company plant at Maywood, Cal. Increased storage facilities for raw materials and finished products, a 20 per cent increase in manufacturing capacity, and added operating efficiency are said to be the objectives of the program.

Bonderite, Parco Compound and Parco Lubrite are produced at the plant.

To accommodate the installation of a mezzanine laboratory, 1200 sq. feet of the main factory building roof are being raised five feet. Tank storage is being increased by new equipment and relocation of existing tanks to a new building.

MacIsaac & Menke Co. of Los Angeles is handling construction.

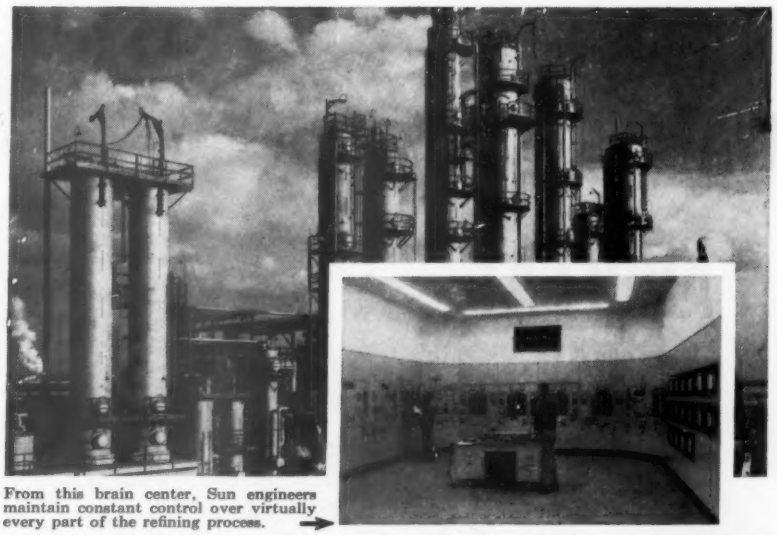
Congress Urges Navy To Cut Paint Output

A restriction in paint manufacturing has been urged on the Navy by the House Govt. Operations Committee.

The committee unanimously approved a report by the Subcommittee on Intergovernmental Operations recommending that paint making, except the plastics, shipbottom and anti-fouling paints, which are covered by patent, "should be discontinued as rapidly as is consistent with sound and economical practises."

Prior to May, 1953, the report pointed out, the Navy was producing 150 types of paint. Production was cut back to 28 types a year ago.

While Navy paint production totaled 5,456,164 gallons in fiscal year 1953, output for fiscal 1954 was estimated at 2,901,000 gallons, the report said.



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Toluene and xylenes are among the important petrochemicals now being made as primary products—not by-products—at the new Sun Oil Co. plant in Marcus Hook, Pa. This is the largest plant on the East Coast extracting these aromatics from petroleum. Precision instrumentation, combined with the most modern available facilities, provides constant control of every step in the refining process to maintain new high standards of uniformity.

For complete information on these new paint and varnish solvents, write Dept. PV-6.

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Now you can make high quality one-coat flat wall paints . . . with maximum non-penetrating properties . . . at low cost. The reason – two new AROFLAT resins: 3040 and 3055. One coat of flat formulated with these resins can be applied over "spackle," wall paper, or primed and unprimed surfaces with complete freedom from ghosting as well as excellent color uniformity. And brushing, leveling, lapping, washability and color retention characteristics are excellent, too!

The new AROFLATS give high quality, low cost flat wall paints with solids content in the 25% range. AROFLAT 3040 is supplied in odorless mineral spirits, while AROFLAT 3055 is supplied in low odor mineral spirits for extra economy.

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STEEL BALL MILLS

(*From page 34*)

area of the ball mill has been well ventilated. Installing bars is usually a two day operation.

SHELL THICKNESS TESTING

The biggest predictable problem encountered in steel ball mill and pebble mill maintenance is the wearing of the shell or lining.

Lined pebble mills, of course, have much thicker linings than the steel ball mills and can be measured with a stretch out rule quite accurately. Comparison with original size will indicate wear. A quick inspection may be made by measuring around the door opening and around the vent plug opening.

For a steel mill with integral shell, a new instrument has been developed. A non-destructive test of the thickness of the shell is possible and is relatively fast and inexpensive. With the "Audigage" it is now possible to program periodic checks and estimate the remaining life of the shell. This will implement a maintenance schedule and minimize lost production time. The "Audigage" is a portable instrument designed to measure thickness from one side only. In operation, a vibrating quartz crystal is placed in contact with the shell under test and an ultrasonic wave is transmitted into the steel. The resulting reading indicates the thickness of the shell directly beneath the crystal. The instrument is completely enclosed in a dust tight case and carries its own battery power. While safe in an adequately ventilated location, it does not conform to explosion proof Class 1 Group D NEMA requirements.

Unjacketed ball mills may be inspected from the outside without the removal of ball charge or paint. Water jacketed mills must be inspected from the inside. If a complete check is to be made, the mill must be empty and of sufficient cleanliness to permit a man to enter. However, an indication of conditions can be obtained through the door opening without complete discharge of the grinding media.

The danger point on ball mill shells is reached at about ¼". After several thickness tests, calculations can be made on exactly how much wear does occur per thousand hours of production.

RESHELLING AND RELINING

The relining in pebble mills is no great problem in that the lining may be broken out of the mill and new lining cemented in. In the steel ball mill, the entire steel ball mill cylinder must be sent back to the factory to be reshelled. This now is an accepted practice as several reshells can be made for one given set of cylinder ends.

MAINTENANCE CARD

All operational maintenance should be recorded in a permanent record system so prediction of wear can be estim ated. Unexpected down time and replacement of grinding media can thus be controlled.

With the modern use of standard parts and fabrication methods, it is now more practical to replace parts in advance of failure. Repairs at the convenience of the work schedule are both cheaper and less critical. Start a planned replacement program.

Finding Answers to problems in

CARBON BLACK

When you call on WITCO-CONTINENTAL for technical service in carbon blacks for tinting and coloring, one of the most modern and complete laboratories in the carbon black field is put to work on your problem. Second to none in the quality of its staff and facilities, WITCO-CONTINENTAL's Carbon Black Technical Service and Research Laboratory has solved many application problems in the paint industry.

We may already have the answers you need. And if we don't, we have the men and the scientific testing equipment to find them for you . . . whenever you say the word.

WITCO-CONTINENTAL manufactures a complete line of furnace and channel blacks for the paint industry, their quality assured by modern plants, strict product control, extensive research, the best in technical service.

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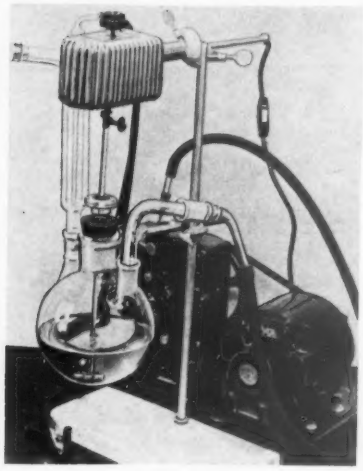
NEW MATERIALS & EQUIPMENT

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.



FISHER

VIBRATING MIXER

For Closed Systems

Known as "Vibro-Mixer, this apparatus is designed to add more power and versatility to closed-system mixing in the laboratory, according to the manufacturer. An enclosed motor vibrates a shaft 120 times a second; a control regulates the mixer over a range that encompasses gentle strokes 0.2 millimeters to powerful strokes 2 millimeters in thrust.

Since this is a non-rotating mixer, a hermetic seal with the reaction flask can be made, thus the mixer can be operated under a low vacuum or pressures of 2 atmospheres, achieving complete mixing without the possibility of dust contamination or of explosion from sparks, says the manufacturer. This unit can also be adaptable in the preparation of emulsions and stable colloidal formations. Fisher Scientific Co., 717 Forbes St., Pittsburgh, Pa.

CELLULOSE COMPOUND

Used as Thickener

Low-salt type of powdered Cellosize hydroxyethyl cellulose is a water-soluble, light colored, free-flowing powder containing 90% hydroxyethyl cellulose. Offered in 3 viscosities: Cellosize WP-09 (viscosity of a 5% solution is about 100 cps. at 20 deg. C.); Cellosize WP-3 (viscosity of a 5% solution is about 300 cps. at 20 deg. C.); and Cellosize WP-300 (viscosity of a 5% solution is about 30,000 cps. at 20 deg. C.).

This new material is said to be useful as a thickener, stabilizer, film former, dispersant, and binder in aqueous systems; employed in the preparation of resin emulsions and rubber latices. Carbide and and Carbon Chemicals, Div. of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

MIDAS GOLD

for extra durability

Midas Gold is not only light-fast itself. It seems to have an unusual ability to protect other pigments used with it.

Midas Gold is rich and transparent. It provides a unique opportunity for new and imaginative color combinations, especially metallics.

May we send you a sample for your own tests? Please indicate the binder or binders with which you expect to use it.

R-B-H . . . *for finishes of integrity*

R-B-H Dispersions

DIVISION OF INTERCHEMICAL CORPORATION
DISPERSION TECHNICIANS
BOUND BROOK, NEW JERSEY

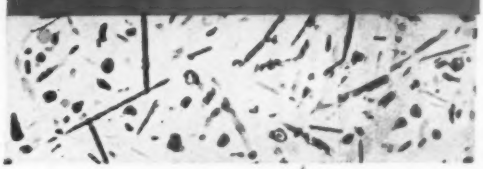
Pigment dispersions in nitrocellulose; ethyl cellulose; urea formaldehyde, vinyl and alkyd resins; chlorinated rubber and other plastic binders.

R-B-H IS A TRADE-MARK OF INTERCHEMICAL CORPORATION

high

AZO ZZZ-22

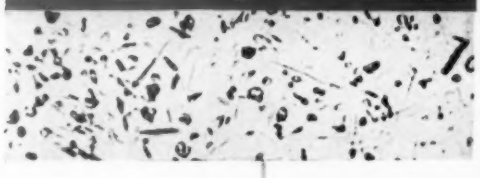
A high oil absorption Zinc Oxide having large Acicular Particles which gives heavy body



medium

AZO ZZZ-11

A medium oil absorption Acicular Zinc Oxide imparting exceptional weathering qualities to exterior paints

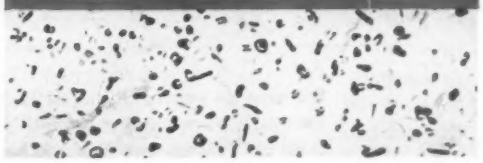


AZO acicular lead-free zinc oxide is a superior pigment available in a wide range of oil absorptions

low

AZO ZZZ-33

A definitely Acicular type with a lower oil absorption, but chemically identical with AZO ZZZ-11 and AZO ZZZ-22



AZO

UNIFORM • DEPENDABLE

AMERICAN ZINC SALES COMPANY

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AMERICAN ZINC, LEAD & SMELTING COMPANY

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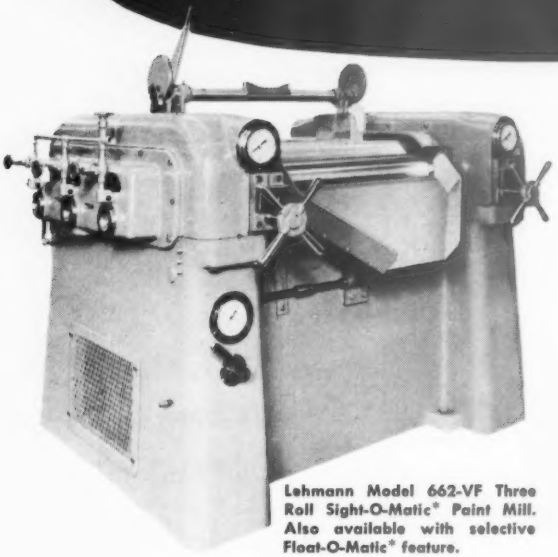
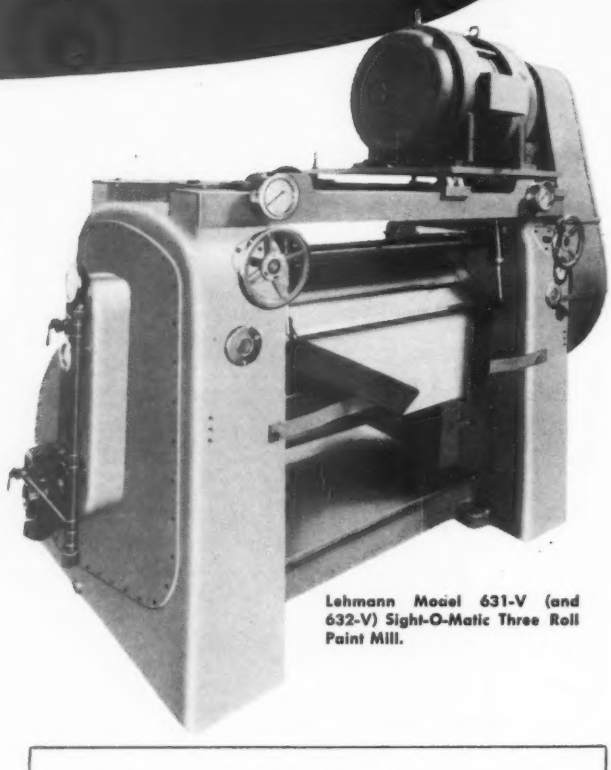
IF YOU NEED BETTER DISPERSION — take it up with LEHMANN



Lehmann Model 662-VF Three Roll Sight-O-Matic* Paint Mill. Also available with selective Float-O-Matic* feature.



Lehmann Model 631-V (and 632-V) Sight-O-Matic Three Roll Paint Mill.

Problems concerning dispersion in paint formulae are daily tasks for Lehmann. We are fully equipped and staffed to carry out research under practical operating conditions. By sending us samples for test, you can avoid the cost and delay of private research.

And we welcome these assignments because they help us to keep Lehmann paint mill design abreast of the needs of technological development in paint formulation. So send us your samples, state your problem, and we will undertake to find the answer for you—all without obligation. Be sure—use Lehmann test facilities.

Do any of your mills need factory reconditioning? Lehmann has cut mill out-of-service time by at least one-half by the recent addition of many modern machine tools and new techniques. Phone or write for details.

Send for descriptive bulletins of any or all machines shown here.

*Reg. U. S. Pat. Off.

LEHMANN

J. M. LEHMANN COMPANY, Inc.

MAIN OFFICE AND FACTORY: 558 NEW YORK AVE., LYNDHURST, N. J.

NEW
MATERIALS — EQUIPMENT

WASHBURN

THIXOTROPIC ALKYD
For Producing Gelled Paints

Thixotropic alkyd can produce oil base paints that never have to be stirred, according to the manufacturer.

The nature of thixotropy causes the thick state of the paint at rest, to change under slight friction to a "flowing" state. The thixotropic paint is dipped out of the can in a thick, jelly-like, non-flowing form that neither drips or runs. Upon brush contact with a surface, the paint flows while applying. Immediately after brushing, as friction ceases, the paint returns to its thixotropic state, thus preventing sagging.

These vehicles have good wetting and grinding properties and the company states that the gelled nature of the thixotropic vehicles makes them absorb and disperse colors more evenly in tinting. The manufacturer also claims that color uniformity is achieved in these thixotropic vehicles. Instead of tint color floating on top (as in conventional paints), or pigments settling hard in the bottom of containers of aged paints, users find uniform color present without stirring. This vehicle is recommended for one coat flats, eggshell enamels, semi-gloss enamels, gloss enamels, wall primers, and sealers, and enamel undercoaters. T. F. Washburn Co., 2244 Elston Ave., Chicago 14, Ill.

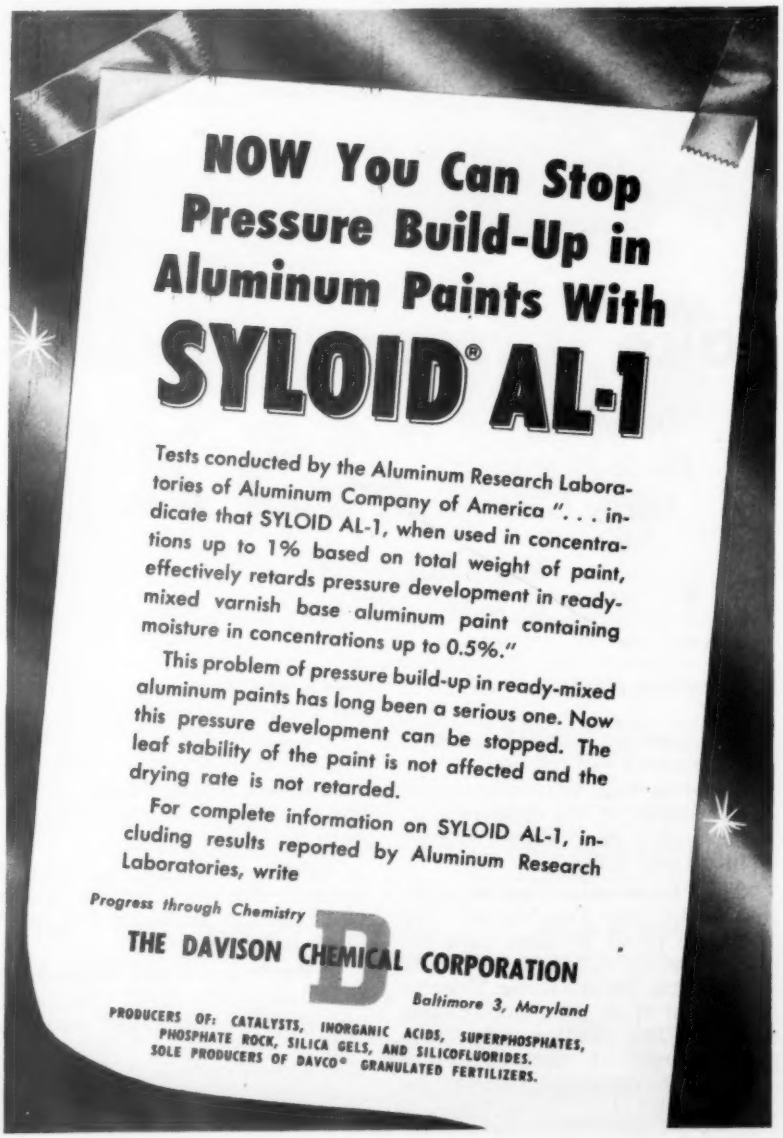
DEFOAMER
For Emulsion Paints

"Pegmol" is used as a levelling and defoaming agent in latex-based emulsion coatings. This additive is soluble in water and disperses into hydrocarbon solvents and into vegetable oils; it is also non-ionic. It has been reported that this material imparts desirable handling properties in putties and glazing compounds. Concentrations of 0.5 to 1.0% based on the weight of the total formula is recommended. In most instances, it is added during the later stages of processing, after pigments are dispersed. Fred'k A. Stresen-Reuter, Inc., 2113 Medill Ave., Chicago 47, Ill.

GELLING AGENT
For Aqueous Systems

Gelling agent (tradename Ben-A-Gel) is a highly beneficiated hydrous magnesium silicate of milky-white color and is used to thicken water solutions or emulsions such as emulsion paints, adhesives, polishes, textile finishers, etc.

The gelling action of this material requires only 1% to 5% based on the water content and is unaffected by heat or aging. Gelling is obtained by mixing this compound in the water system by high speed stirring for a few minutes. National Lead Co., 111 Broadway, New York City, N. Y.


NOW You Can Stop Pressure Build-Up in Aluminum Paints With
SYLOID® AL-1
Tests conducted by the Aluminum Research Laboratories of Aluminum Company of America ". . . indicate that SYLOID AL-1, when used in concentrations up to 1% based on total weight of paint, effectively retards pressure development in ready-mixed varnish base aluminum paint containing moisture in concentrations up to 0.5%."
This problem of pressure build-up in ready-mixed aluminum paints has long been a serious one. Now this pressure development can be stopped. The leaf stability of the paint is not affected and the drying rate is not retarded.
For complete information on SYLOID AL-1, including results reported by Aluminum Research Laboratories, write
Progress through Chemistry
THE DAVISON CHEMICAL CORPORATION
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PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, AND SILICOFLUORIDES.
SOLE PRODUCERS OF DAVCO® GRANULATED FERTILIZERS.

Take it from the test panels

Dutch Boy Basic Silicate White Lead* —— **"45X"** ——→

has what it takes to make foolproof exterior paints

For foolproof exterior paints... "lead."

"No question about that," most paint makers will tell you.

"And for 'lead' at its economical best," many of the leaders add, "it's 'Dutch Boy' Basic Silicate White Lead '45X'."

They know what they're talking about, too. They've not only seen the proof in their own exterior paints... in a lot fewer complaints, for one thing. They've also seen it at National Lead's Sayville Test Station, where exposure tests of many different pigments have been conducted for many years.

In white House Paints, "Dutch Boy" Basic Silicate White Lead "45X" improves self-cleaning properties, these tests prove.

In tinted House Paints, it increases film durability and resistance to color changes.

In Primers, "45X" contributes greater adhesion, plus the water resistance to maintain the paint film's adhesive bond.

In Porch and Floor Enamels, it plasticizes the film, increases abrasion resistance, and improves adhesion.

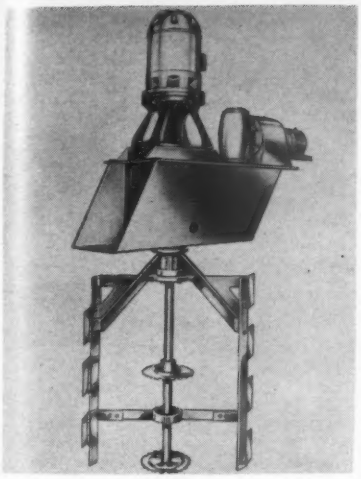
All these things adaptable "45X" does even though you use fewer pounds than with other white lead types. That's because the reactive portion of each "45X" pigment particle is concentrated at the surface: thus, making available proportionately larger amounts of "lead."

Improve your exterior paints – yet save money. Standardize on "Dutch Boy" Basic Silicate White Lead "45X" in your formulations.

National Lead Company: New York 6; Atlanta; Buffalo 3; Chicago 8; Cincinnati 3; Cleveland 13; Dallas 2; Philadelphia 25; Pittsburgh 12; St. Louis 1; San Francisco 10; Boston 6 (National Lead Co. of Mass.).

*Reg. U. S. Pat. Off.

NEW MATERIALS — EQUIPMENT



COWLES

DUPLEX DRIVE DISSOLVER
Sizes From 100-1000 Gals.

"Duplex Drive Dissolver" that combines a high-speed impeller with a gate-type scraper arrangement is said to be helpful with difficult solution, dispersion or suspension problems. The drive shaft of the high speed unit runs through the hollow, slow-speed drive. The slow speed attachment can be designed to scrape the sides of the tank, or it may be used as a slow speed agitator to run in either direction. The slow speed agitator in combination with the high-speed impeller can be used for three primary purposes: (1) if the slow speed blades run in the opposite direction of the high-speed impeller, they will act as a baffle, giving more intense mixing at the impeller; (2) run in the same direction as the impeller, the slow-speed blades will help handle very viscous materials; (3) slow speed agitator can also be used to hold a batch under gentle agitation while waiting for future use after preparation with the high-speed mixer. For further information, write to the Cowles Co., Inc., Cayuga, N. Y.

PRESERVATIVE
For Emulsion Paints

"Cunimene" D-2747 contains as its active ingredient 50% Rosin Amine D Pentachlorophenate in a special formulation which enhances fungicidal and bactericidal

A NEW Weather-Ometer BY ATLAS...

MODEL DMC

Accurate temperature control with a modulated circulatory system, a heavily insulated cabinet and other features make the DMC Weather-Ometer an important new addition to the Atlas line.

The modulated circulatory system in the DMC Weather-Ometer provides a controlled volume of air circulated at a constant temperature for maintaining an even temperature in the test chamber regardless of outside room temperature. The heavily insulated cabinet is effective in maintaining accurate controlled temperatures with the resulting high degree of accuracy in making duplicate tests in product development and maintaining uniformity in production control. Controlled relative humidity is available as optional equipment.

All automatic controls including complete voltage controls are located on the front panel of the Weather-Ometer directly above the door of the test chamber.

Both horizontal and vertical testing is available. Cup containers for bitumens and other semi-liquid materials and vertical panels for solid materials.

Source of radiation is two Atlas enclosed violet carbon arcs.

Complete technical information on the DMC model and other Weather-Ometers is contained in the new Weather-Ometer catalog. A copy will be mailed on request.

ATLAS ELECTRIC DEVICES CO. • 361 W. Superior St. • Chicago 10, Illinois

Manufacturers of accelerated testing equipment for over a quarter of a century

WEATHER-OMETERS • FADE-OMETERS • LAUNDER-OMETERS

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At your service—flexible, prompt, dependable deliveries of high-quality aromatic solvents. Call the Barrett office nearest your plant. Distribution in 11 key industrial areas!

BARRETT DIVISION, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

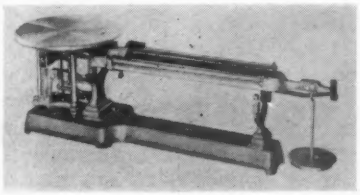
BARRETT SOLVENTS*

*Reg. U. S. Pat. Off.

New York	Whitehall 4-08 0
Detroit	Vinewood 2-25 0
Philadelphia	Jefferson 3-30 0
Chicago	Bishop 7-43 0
Boston	Malden 2-74 0
Cleveland	Cherry 1-59 3
†Los Angeles	Mutual 79 8
St. Louis	Plateau 2-25 2
Indianapolis	Garfield 20 6
Newark	Mitchell 2-09 0
†Buffalo	Delaware 36 0

†Hi-Flash Solvent not available at this station.

activity through synergistic action. The manufacturer claims that the use of 0.35% by weight of this preservative based on the weight of a finished emulsion paint, will preserve the can stability of the paint for extended periods of time; to obtain a mildew-resistant paint, 2.0-3.0% based on the weight of the finished paint, should be used. Efflorescence is said to be eliminated, due to the absence of alkaline earth metals in this material. This material is a liquid and thus facilitates handling; is readily dispersible in emulsion paints and has a low order of toxicity. Scientific Oil Compounding Co., Inc., 1637-55 Kilbourn Ave., Chicago 23, Ill.



OHAUS

SOLUTION BALANCE
With Self-Aligning Bearings

Redesigned heavy duty solution balance is said to have the following features: the addition of a graduated end reading dial, which enables the user to obtain a balancing position quickly and eliminates the danger of any parallax errors; light weight aluminum alloy beam reduces the inherent beam load, thereby increasing the sensitivity and life of the balance; relief etched beams are also of stainless steel, thus making them ideal for use in laboratories where corrosion is a factor; self-aligning bearing distributes the load evenly over the full length of the knife edge. Ohaus Scale Corp., 1050 Commerce Ave., Union, N. J.

GAS FORMING INHIBITOR
For Aluminum Paints

Gas-forming inhibitor known as Compound S-242 is said to prevent gas formation caused by the slow oxidation of aluminum powder by even traces of water, producing aluminum oxide and hydrogen gas. The oxidation is prevented by the chemical action of the inhibitor. This material may also act as desiccant in the paste absorbing the free water. For further details, contact Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa.

POTASSIUM SALTS
Reduces Efflorescence

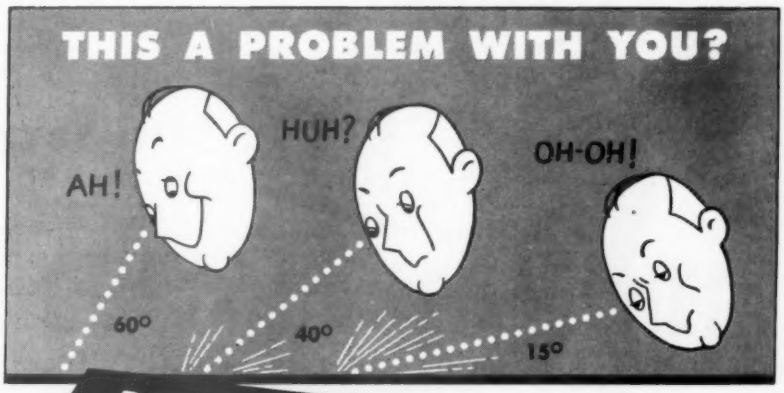
Potassium salts of pentachlorophenol and orthophenylphenol, known as "Kayphenates" enable manufacturers of water dispersed paints to replace the sodium salts, formerly used as preservatives. It is said that the hazards of efflorescence is reduced by using these salts. Samples and literature may be obtained from Naftone, Inc., 515 Madison Ave., New York 22, N. Y.

FATTY ACID
Highly Distilled

Highly distilled fractionated fatty acid, known as Oleic Acid No. 905, is recommended by the producer for use where high acid number, low titer and color clarity are necessary. The product has exceptional color clarity and stability, according to the manufacturer.

Specifications are similar to that of a high grade red oil: Titer—5 max.; FFA (as oleic) 98-102; Acid No. 195-204; Iodine No. 90-96; Sap. No. 198-204; unsaponifiable 1.0% max.; Lovibond (5-¼" col.) 10 Y/1.0 R. max.

For further information write Swift & Company, Industrial Oils Department, 1838-165th St., Hammond, Indiana.



DICALITE Flatted paints are FLAT from all angles!

If you have the problem of flat paints being perfect at the "standard" 60° angle, but showing too high a sheen at lower angles, Dicalite L-5 can help you. This Dicalite Flatting Agent produces paints that are flat from *any* angle, because of the unique structure of the diatom particles, their fineness and their great surface area. In rooms with long unbroken wall or ceiling areas, paints flatted with Dicalite will not glare or shine at any angle.

Also, in producing egg shell or semi-gloss finishes, Dicalite Extenders and Flatting Agents give accurate and reliable control of gloss to any degree desired—and the control is easy, not "critical." Dicalite is available in several grades, with a wide range of properties to fit them for the production of all kinds of finishes. Data and suggested formulations on request. Write for Bulletin C-21.

Dependable GREAT LAKES Dicalite® DIATOMACEOUS MATERIALS

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GREAT LAKES CARBON CORP.
614 S. FLOWER STREET
LOS ANGELES 17, CALIF.

NOT the way to buy TiO_2

You can choose wisely when you buy titanium dioxide. Because *one* name in TiO_2—TITANOX®—stands out from the others. Only TITANOX enables you to get the most out of titanium dioxide.

Here's why: In TITANOX, the original titanium pigments, every property of TiO_2 is fully developed and carefully controlled. The result is stricter color uniformity . . . easier mixing . . . easier grinding . . . greater opacity. In short, many of your pigmentation problems can be neatly solved with TITANOX white pigments.

Consult our Technical Service Department on the TITANOX way of solving your white pigmentation problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

® **TITANOX**

the brightest name in pigments

TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

2347

NEW MATERIALS — EQUIPMENT

FERRO

THICKNESS GAUGE

Pocket-Size

Known as the "Elcometer", this thickness gauge measures non-magnetic protective and decorative coatings on ferrous metal bases with an accuracy of ± 5% ± .0001 inch, according to the producer. It is not restricted to flat surfaces. The meter incorporates a locking device, permitting accurate reading of the scale after measuring an inaccessible area where the scale cannot be seen. It can be utilized outside the factory or on the production line. For complete details on the instrument, write to Ferro Corp., Cleveland, Ohio.

WATER SOLUBLE RESIN

Internally Plasticized

Synthetic resin, Chem Resin G, is said to have application in protective coatings, paper, metal and textile processing. pH of the resin solution is 5 and is claimed to be stable and compatible in acid, neutral, and alkaline medium. Resin is soluble in water and most oxygenated organic solvents. According to the manufacturer, the dried film is clear, flexible and is resistant to nearly all hydrocarbon solvents, greases, and oils. Other properties include: good binding properties for wood, paper, textile, brick, masonry, etc., high gloss, quick drying, needs no curing. Suggested uses for this particular resin solution are: binding agent and carrier in calcimine water paint, and in the manufacture of water-soluble lacquers. Chemical Products Corp., P.O. Box 61, Little Falls, N. J.

SURFACE ACTIVE AGENT

For Emulsion Paints

"Nonic 300", a polyethylene glycol alkyphenyl ether non-ionic surface active agent, is characterized by stability to acids, alkalies and oxidizing agents, according to the manufacturer. This compound is a wetting agent, detergent and an emulsifying agent, and is said to be effective over a wide range of water hardness, ph and temperature. Soluble in water, many chlorinated compounds, alcohols, ketones, esters and aromatic hydrocarbons. Compatible with soap and synthetic anionic and cationic surface active agents. Suggested as an emulsifier for emulsion paints. Sharples Chemicals, Inc., Pennsylvania Salt Mfg. Co., 1000 Widener Building, Philadelphia 7, Pa.

PARA-XYLENE

For ASTM Test

Para-Xylene is available in an ASTM Flash-Point check grade. It meets specifications of the American Society for Testing Materials for specific gravity, boiling range (ASTM method D-850 and D-1078) and purity (ASTM D-1015 and D-1016). This chemical is said to be designed as a flash-point test standard for closed-cup devices, and is offered in quart lots. Fisher Scientific, 717 Forbes St., Pittsburgh 19, Pa.

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A 6460
STANDARD-CHLORINATED
BLAZING RED TONER
Light-fast • Clean and Brilliant
SOFT-GRINDING
Excellent for interior or exterior use

●

B 409
CHLORINATED
SUNSET RED TONER
(ORANGE UNDERTONE)
A strong, soft-grinding color with good hiding power

●

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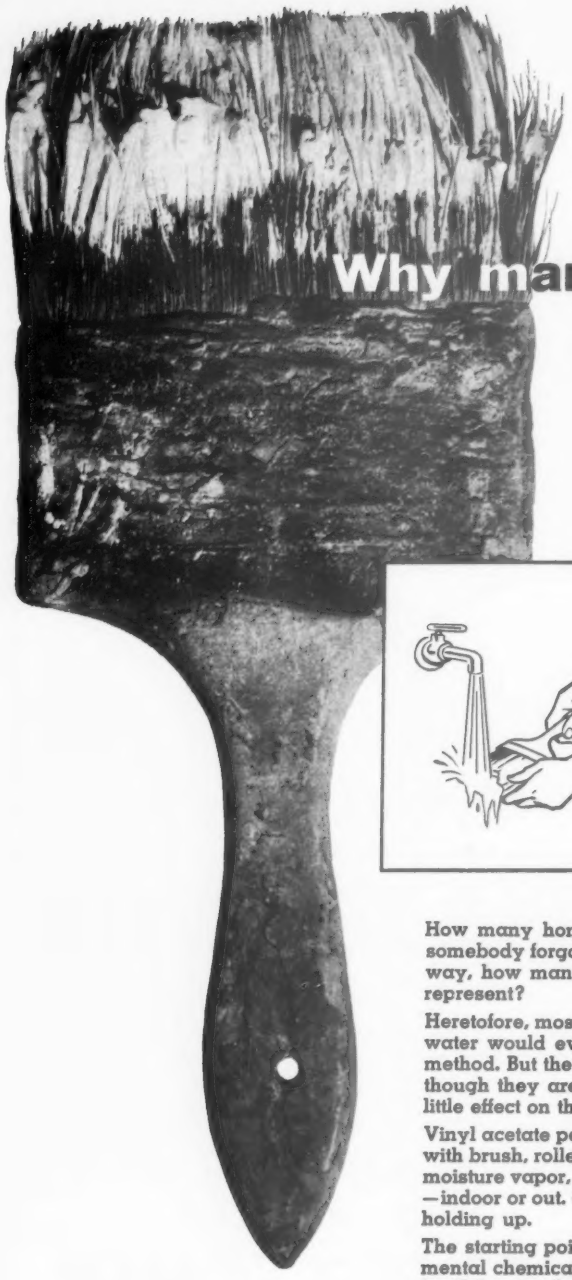
4735 DISTRICT BLVD., LOS ANGELES 11



Why many painting projects are never started

Easy brush cleaning is one of the reasons why Vinyl Acetate Water Based Paints promise to be popular with everyone

How many home painting projects are stopped in their tracks because somebody forgot to clean the paint brushes the last time? To put it another way, how many lost sales of paint does the problem of brush cleaning represent?

Heretofore, most paints that could be washed out of brushes with ordinary water would eventually be "washed off" painted surfaces by the same method. But the new vinyl acetate paints exhibit sturdier properties. Even though they are water based, when once dry, water and moisture have little effect on them.

Vinyl acetate paints can be called "one coat" paints. They can be applied with brush, roller or spray and dry in minutes. Best of all, they're porous to moisture vapor, which means they can be used on fresh plaster and stucco —indoor or out. Original applications of these paints ten years ago are still holding up.

The starting point of these new paints is vinyl acetate monomer—fundamental chemical now produced in volume from selected petroleum gases by Celanese. It is converted into resin emulsions by other processors who supply the product to paint manufacturers. Celanese large scale production has been a major factor in stabilizing the price of this chemical and helping to make these new paints competitive in every application. Would you like to know more about the myriad industrial applications for vinyl acetate monomer? They embrace the textile, adhesives, coatings, paper and soil conditioning fields. Write for descriptive folder.

Celanese Corporation of America,
Chemical Division, Dept. 558-F
180 Madison Avenue, New York 16

Celanese* CHEMICALS

*Reg. U. S. Pat. Off.

Personnel Changes

AMERICAN CYANAMID

Dr. Charles R. Witschonke has been named manager of the Physical-Analytical Section of the Research Division of the Bound Brook Laboratories. He joined the company in 1945 as a research chemist, and was head of the Physical-Chemical Measurements Laboratory. Previously he was research chemist at Brown University, and head of the Development and Engineering Group of the Physical Chemistry Section of the Naval Research Laboratory, Washington, D. C. He attended Kalamozoo College, and received a Ph.D. in Physical Chemistry from Brown University and is the author of numerous scientific articles.

C. R. Witschonke

KINETIC DISPERION

Harold S. Ellsworth has been appointed Manager of Technical Services, according to Charles E. Kew, president. He graduated as Chemical Engineer from Lafayette College in 1933; and was employed for 15 years by PPG as chemist and production engineer. Subsequently he was production manager and general superintendent of Modine Paint Co., Chelsea, Mass. He is president of New England Paint and Varnish Production Club, and author of papers on production methods. He will specialize on customer technical research in the use of Kady mills.

H. S. Ellsworth

PENNSALT

William P. Drake has been named President of the Industrial Chemicals Division. In his new capacity Mr. Drake will be responsible for manufacture and sale of industrial chemicals. Other major operating divisions of the consolidated company are the Chemical Specialties Division, Pennsylvania Salt Mfg. Co. of Washington, Sharples Chemicals, Inc., and Pennsalt International Corporation.

SUN CHEMICAL

E. R. Friese, director of manufacturing, has been named vice-president He joined the company in the production department in 1936, and since that time has received many promotions leading to his present one. The corporation has 29 plants manufacturing printing inks, building maintenance and construction materials, industrial coatings, textile and industrial chemicals, waxes and reinforced plastics, which will be under the direction and supervision of Mr. Friese.

E. R. Friese

Howard Beach

Warren Beach

ECLIPSE AIR BRUSH

Howard W. Beach, after serving more than thirty-five years as president, has resigned. **Warren Beach,** his son, has been elected his successor. He will continue to serve as Chairman of the Board. His son has been associated with the company since 1945, and has been in active charge of sales.

MONSANTO PRODUCTS FOR THE PAINT INDUSTRY

Urea formaldehyde resins
Melamine resins
Phenolic resins
Vinyl resins
Styrene latices for water base paints

★ East Coast . . . Middle West . . . Pacific Coast . . . Monsanto's three plant locations give paint manufacturers anywhere in the country a quick, convenient source for high quality resins.

Whether you are formulating paints for interior or exterior use . . . whether your problems are gloss, solvent resistance, durability, curing time or color stability . . . Monsanto can help you. Ask for information on Monsanto's broad and versatile line of "special property" resins, one or more of which will upgrade your coatings' performance. Use the convenient coupon below.

MONSANTO

SERVING INDUSTRY . . . WHICH SERVES MANKIND

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

MONSANTO CHEMICAL COMPANY, Plastics Division
Room 5005 Springfield 2, Mass.

Please send me information on the following resins: ☐ Urea ☐ Melamine ☐ Phenolic ☐ Vinyl ☐ Styrene (latices for water base paints)

☐ Please send me information on Monsanto's styrene latex system for water base paints.

Name & Title _____

Company _____

Address _____

City, Zone, State _____

For Aluminum Paints that are...

- **HIGH LUSTER**
- **GOOD LEAFING**
- **ECONOMICAL**
- **FAST DRYING**
- **EASY TO APPLY**

Specify VELSICOL RESINS AD.21 and AB 11.2

Velsicol Resins AD-21 and AB-11-2 are especially suitable for economical, excellent-quality aluminum vehicles and ready-mixed aluminum paints. These neutral hydrocarbon resins are soluble in both aliphatic and aromatic naphthas, and are compatible with bodied vegetable and marine drying oils. They impart fast-drying characteristics. Solutions of the resins have high surface tension properties which promote leafing and flooding of aluminum pigment. The non-acidity of the solutions favors long leaf retentivity. AD-21 and AB-11-2 are available in either solid or solution form. For information and advice about their use, write to the Velsicol Corp. Technical Dept.

PETROLEUM DERIVED CHEMICALS
VELSICOL
SERVING BASIC INDUSTRIES

VELSICOL CORPORATION

Division of Arvey Corporation

General Offices and Laboratories
330 East Grand Ave., Chicago 11, Ill.

Foreign Division
100 East 42nd St., New York 17, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

COMMERCIAL SOLVENTS

W. Ward Jackson has been named vice-president, according to an announcement by J. Albert Woods, president. He will direct the petrochemicals division. Up to the time of this appointment he has been general manager of the industrial chemicals sales division. He succeeds Abbot K. Hamilton, who has resigned to resume operations as a business consultant. For 22 years prior to joining the firm in 1921, Mr. Jackson held sales and executive positions in the chemical industry, among them being Chemical Consultant to the Chemical Division of the National Production Authority.

W. W. Jackson

DEVOE & RAYNOLDS

J. Mack Creager has been named president of Hart & Burns, industrial and marine paint manufacturing company, recently acquired by Devoe & Raynolds Co., Inc. He was formerly vice-president of Jones-Dabney Co. The plant is located in Riverside, California, and has an area of 32,000 square feet. Manufacturing facilities for Jones-Dabney's automotive and industrial finishes will be provided. Mr. Creager joined the firm in 1929 as a laboratory assistant, and was progressively department superintendent, production manager, divisional sales manager and assistant general manager.

J. M. Creager

REARDON

Charles H. Moran has been elected Chairman of the Board of the Reardon Co., St. Louis, Mo. to fill the vacancy caused by the recent death of James A. Reardon. G. Carroll Stribling has been elected a director.

CELANESE

William L. Milheim has been named Chemical Division sales manager in charge of the southeastern district with offices in Charlotte, North Carolina.

William B. Sinclair has been named New England district sales manager with offices in Boston, Mass.

W. D. Matthews has been named Metropolitan district manager, and **J. W. Morton,** mid-Atlantic district manager. Both have offices in New York City.

GARRIGUES

William Lawrence has been appointed director of the Eastern Technical Service Department of Garrigues, Stewart & Davies, Inc., who are representatives of the Pacific Vegetable Oil Co.

RINSHED-MASON

Gordon Johnston has been appointed sales manager of Rinshed-Mason Co. of Canada, Ltd., with headquarters at Windsor, Ontario, Canada, manufacturers of architectural, automotive and industrial paints.

HOOKER

Walter L. Chemerys has been assigned to the process study group, as has **Rajinder Kumar Narang. Robert F. Supcoe** has been appointed a laboratory chemist.

AMERICAN-MARIETTA

A. I. Schroeder, manager of trade and industrial sales for Marietta Paint & Color Co., a division of American-Marietta Co., has been promoted to the executive staff of the parent company. His new title will be Manager of Trade Sales, with full responsibility for coordinating merchandising, advertising and sales for all of A-M's trade and industrial maintenance paints. He will make his headquarters in the general offices, in the American-Marietta Bldg., Chicago.

A. I. Schroeder

Chats about Finishes

DECORATOR COLORS
FOR CHEMICAL PLANTS
by
FRED K. SHANKWEILER
Manager of Hercules' Chlorinated Products Sales

Paints based on Parlon® (chlorinated rubber) are proving that protective coatings need not be dull and drab to be effective. Even in tough industrial environments, Parlon coatings *stay* on, light and bright, resisting attacks of acids and alkalies either underneath or on the paint film.

A good example is the attractive, immaculately kept plant of the R. K. Laros Company, Bethlehem, Pennsylvania. Here synthetic blood plasma is produced from sugar in a unique new process. Finished with a Parlon-based paint* from ceiling to floor in custom-mixed colors, the plant looks like new after over two years' exposure to alcohol and hydrochloric acid fumes.

Today, protection is as important as ever, but at the same time color is becoming more and more of a factor in the selection of a finish. There's no better combination of the two —for tough jobs—than Parlon.

**Barreled Sunlight's A & A Parlon Paint*

Fred K. Shankweiler

Cellulose Products Department
HERCULES POWDER COMPANY
INCORPORATED
926 Market St., Wilmington 99, Del.

S. A. Segal

J. Dillon

NATIONAL STARCH

James Dillon has been elected vice-president. He is a chemical engineer with a degree from Case Institute. He previously was in the manufacturing division, later manager of the midwest division in Chicago, director of personnel relations in the home office, and as secretary and director of synthetic resin development. **S. A. Segal** was elected secretary to fill Mr. Dillon's position. He is a graduate of University of Pennsylvania, Wharton School. He was also with the Dept. of Agriculture and the Office of Price Administration, Chief, Grocery Products Branch and associate director, Food Division.

NATIONAL CAN

Andrew M. Toft, vice-president, has been elected to the Board of Directors, according to an announcement from Robert S. Solinsky, president. He has been vice-president since 1953. Before joining the company he was vice-president and general manager of Cans, Inc., which was acquired by National Can in 1952. Prior to that he was associated with Wheeling Steel Corporation as plant manager, and from 1936 to 1941 he was plant superintendent in Chicago for Owens Illinois Can Co. He was graduated from Healds Engineering College, San Francisco, where he received a degree in mechanical engineering.

A. M. Toft

PITTSBURGH COKE

Henry Avery has been appointed manager of the Coal Chemicals Division. He was manager of the Plasticizer Division since 1951 and will continue in that capacity in addition to his new duties.

NEVILLE

Alan S. Evans, Jr., has been elected vice-president-Sales. Since 1942 he was associated with the Coal Chemicals Division of the Pittsburgh Coke & Chemical Co., and most recently manager of that division. He is an active member of the American Coke and Coal Chemicals Institute.

CELANESE

David D. Hecht has been promoted to Manager of the Product Development Department, Chemical Division. For the past five years he was Director of the Application Laboratory, Summit, N.J. **Michael J. Curry** has been promoted to the post vacated by Mr. Hecht. **J. J. MacFarland** had been made assistant to the General Manager of the Plastics Division.

PPG

Robert W. McKinley has been appointed technical representative of the glass division product development department. Prior to the appointment Mr. McKinley was a product development engineer with the Pittsburgh Corning Corporation.

AMERICAN CYANAMID

Dr. J. P. Milionis has joined the New Product Development Department, to introduce new Cyanamid products to the chemical industry, in addition to working on general development projects. He received his Ph.D. in organic chemistry in 1951 from Purdue University, and since that year was a research chemist in the Stamford research laboratories.

FOSTER D. SNELL, INC.

Dan Schoenholz has been promoted to Director of Product Development Department. The new position will cover paints, waxes, varnishes, polishes, inks, adhesives and chemical specialties. **Bernard Berkeley** will act as Assistant Director of the department.

Successful Coatings

This duck literally would be sunk if his coating were not waterproof. If it's water-proofness you are looking for in your coatings, as well as excellent resistance to acid and alkali, Neville Resins will fill the bill—adequately.

A smart duck we know has suggested the following formula for a highly successful exterior aluminum paint vehicle:

GALLONS	POUNDS	
	100	R-12 NEVILLE RESIN
20	155	ALKALI REFINED LINSEED OIL
20	157	CHINA WOOD OIL
11.5	83	2-50-W HI-FLASH SOLVENT
51.5	329	MINERAL SPIRITS
	1.3	6% COBALT NAPHTHENATE
	825.3	

NEVILLE

METHOD OF PREPARATION: Place both oils and 40 pounds R-12 Neville Resin in the kettle and heat to 545-550° F. and hold at this temperature for approximately 45 minutes. Check with remaining R-12 Neville Resin. Reduce. Finally add drier.

VEHICLE CONSTANTS:

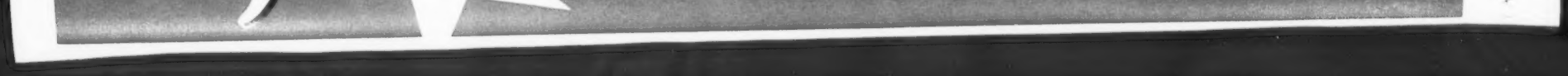
Solids	50%
Viscosity (Gardner)	B-C
Acid Number (on solids)	Less than 5

CALL ON US FOR SAMPLES (We think you will take to them like a duck to water.)

R-55

Plants at Neville Island, Pa., and Anaheim, Cal.

NEVILLE CHEMICAL CO.
PITTSBURGH 25, PA.



Skyrocket
HIGH VISCOSITY
MEDIUM VISCOSITY
LOW VISCOSITY
EXTRA LOW VISCOSITY
Your Paint Production with
Marbon "9200"
Soluble High Styrene Resins
Four Varied Viscosity Grades Allow The Manufacturer to Broaden His Field
. . . the wide range of Marbon "9200" viscosity-grades permits the same equipment to be used for the simple manufacture of finishes for stucco, cement and concrete block walls; cement floors; swimming pools; plaster walls; traffic paints; fast-dry lacquers; metallic finishes; maintenance paints and interior enamels.
Use Marbon "9200" HV for low vehicle solids at higher viscosity.
Use Marbon "9200" MV and LV for General Use.
Use Marbon "9200" LLV for high vehicle solids at lower viscosity.
GET THE FACTS – Write TODAY FOR TECHNICAL LITERATURE
Marbon
MARBON CORP.
GARY, INDIANA
SUBSIDIARY OF BORG-WARNER
MARBON . . . Your Buy-Word for Product Perfection

J. F. Quinty

W. J. Major

EMERY INDUSTRIES

J. F. Quinty has been appointed to handle sales of fatty acids and derivatives, plasticizers, and textile oils in northeastern Pennsylvania and northern New Jersey. He is a graduate in chemical engineering of Purdue University. **W. J. Major** has been appointed to the chemical sales staff. He was formerly with General Electric Co., Hanford Atomic Energy Works, and has a B.S. in chemistry from the University of Colorado.

A. C. TRASK

Walter A. Wachholtz has been elected vice-president. He has been associated with the company since 1945. He received his Chemical Engineering degree from Lehigh University in 1931. In 1933 he was in Germany doing research work for a German firm in shoe finishes and adhesives. Returning he re-associated himself with McCloskey Varnish Co. doing research, became this firm's plant manager in Chicago, and then joined Trask as Technical Director in 1945. He is a member of the Chicago Paint, Varnish & Lacquer Association, and an honorary member and former president of the Chicago Paint and Varnish Production Club.

W. A. Wachholtz

KOPPERS

Dr. T. E. Robbins has been appointed assistant manager Laboratory Section. **R. S. Detrick** has been named assistant manager Laboratory Branch. **Dr. H. E. Tiefenthal** will replace Dr. Robbins as group leader.

PENNSALT

Alfred H. Pope has been named product supervisor for metal cleaners. He formerly was connected with the Technical Department staff.

NATIONAL CAN

Mervin B. France has been elected to the Board of Directors. He is president of the Society for Savings in the city of Cleveland, O.

GE

Anthony J. Gizzi has been appointed technical sales representative for Glyptal alkyd resin products in the metropolitan New York area.

CONTINENTAL CAN

Thomas R. Metzger has been named sales manager of general line, non-food products containers for the Central Metal Division, with headquarters in Chicago, Ill.

CROWN CORK & SEAL

Robert F. Duemler has been appointed divisional vice-president in charge of sales of the Crown Can Division, according to announcement from George W. Crabtree, vice-president and general manager of that division. His headquarters will be in Philadelphia.

VALSPAR

Paul MacDonald has been named vice-president in charge of sales, and elected a director. He has a B.S. in Industrial Engineering from Northwestern University, and was connected with Sears, Roebuck & Co., for 20 years, with broad experience in selling, store management, mail order operating, control and merchandising. He established the warehousing and distribution program currently used by Sears, Roebuck. His last position with Sears was as a buyer of building materials.

Paul MacDonald

NOW GIVE YOUR FINISHES BETTER "PAINT-ABILITY"

Baker's® THIXCIN

means a better product... an easier-to-use product... at the consumer level

SUGGESTED

for	to
Enamels, Flats, Semi-gloss, Oleo-resinous, Alkyds, Synthetic Rubber Based Paints	Build Body without letdown, Improve Brushability, Control Sag, Suspend Pigments, Prevent Pigment Flooding

THIXCIN is a new non-yellowing paint additive which functions efficiently in all paint solvents, including odorless types. Not affected by reactive pigments. It costs less because you use less.

Let us tell you more about THIXCIN
Write for Application Newsletters Nos. 4 & 5

ESTABLISHED 1857

THE Baker CASTOR OIL COMPANY

120 BROADWAY, NEW YORK 5, N. Y.
LOS ANGELES • CHICAGO

TALL OIL unitol NEWS

Union Bag & Paper Corporation • Chemical Sales • 233 Broadway, New York 7, N. Y.

UNITOL G-7 NATURAL FOR ONE COAT ALKYD FLAT

Unitol brand of tall oil is giving the paint industry an inexpensive raw material for producing the currently popular one coat alkyd flats.

Unitol G-7 with its color improvement will become the standard material to be used in the formulation of these vehicles.

OTHER LABORATORY REPORTS

A 5% maleic modified—PE ester, has a color of Gardner 7 minus at 50% solids: a 20-gallon oil length, Unitol G-7 (DCO extended) maleic modified PE varnish has a color of Gardner 4 plus at 50% solids.

Film staining of these vehicles is noticeably reduced in comparison to other refined tall oils.

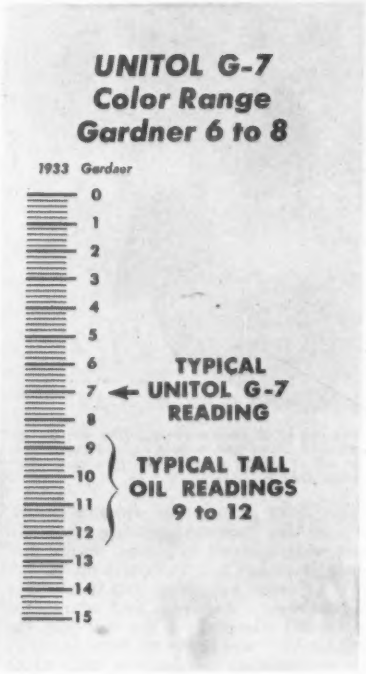
G-7 Color Stability Greater, says Doran!

Unitol G-7 achieves a level of color stability considerably superior to the performance record of any other refined tall oil, declares A. B. Doran of Chemical Sales, Union Bag & Paper Corporation.

Doran states that evaluation in the laboratories of Batelle Memorial Institute, has established the exceptional color stability of this new tall oil product.

Inquiries are invited from companies interested in possible applications of Unitol G-7, whether or not they are presently tall oil users. Samples, specifications and additional information are available on request.

Union Bag Develops Lightest Refined Tall Oil



NOW FOUR UNITOL TALL OILS

In addition to Unitol G-7, Union Bag also manufactures Unitol S (for phthalic alkyd resins and quick drying maleics); Unitol V (varnish grade for high viscosity requirements); and Unitol R (general purpose refined).

Coating Industry Sees Wide Applications for UNITOL G-7 in Whites

Unitol G-7, a new refined tall oil with outstanding color, color stability and improved drying characteristics, has been placed on the market this month by Union Bag & Paper Corporation, New York.

The new product is of particular interest to the coating industry since Unitol G-7 offers significant new opportunities to utilize refined tall oils in whites and light tints.

IMPROVED COLOR CHARACTERISTICS

Unitol G-7 is by far the lightest refined tall oil to be introduced commercially. It can be used in the formulation of many end products or coatings where, until now, rigid color requirements have made tall oil impractical.

In addition to its original color advantage, G-7 has excellent bleaching characteristics and color retention. This enables the production of lighter colored end products than heretofore possible with tall oil.

GLIDDEN

E. W. Weith has been appointed technical service director for the Central Industrial Region, Cleveland, Ohio, according to an announcement by G. S. Forbes, regional director. In his new capacity he will expedite the solution of technical problems, and work in supervisory capacity with laboratory and production personnel to insure correct formulation and production control of industrial finishes. He joined the company in 1951 as an assistant in the Technical Service Department.

E. W. Weith

HEYDEN

Kenneth M. Irey has been elected assistant vice-president. He has been chemical production manager since 1953 and previously served as assistant manager of the Garfield, N. J. plant.

PPG

Howard J. Mather has been named general manager of industrial sales for the paint division. **George P. Myers** has been appointed industrial sales manager of the Suydam Division.

AMERICAN CYANAMID

Dr. J. C. Pullman has been appointed assistant to the Manager of the New Product Development Department.

WITCO

Harry M. Brubaker has been elected vice-president in charge of the rubber chemicals division. He joined the company in 1951 as assistant sales manager of the carbon black division, and was formerly with B. F. Goodrich Co., Phillips Chemical Company, and the Sid Richardson Carbon Co. Headquarters of the new division will be at Akron, Ohio, and will specialize on sales of carbon black anti-sun-checking wax, hard hydrocarbon and softeners to the rubber industry.

H. M. Brubaker

Clement Damen, formerly with the Washington office, has been appointed manager of the new sales offices in Atlanta, Ga. **James E. Cunningham** has been appointed to the New York sales staff. **Thomas F. Callahan** has been transferred to the Cleveland sales office.

AMERICAN WHEELABRATOR

William A. Illsley has been advanced to sales engineer in Detroit branch. **W. J. Sutherland** has been made District Sales Engineer in the Springfield, Mass. branch. **John H. Burlingame** has been appointed Service Engineer in Springfield. **C. J. Osborn** has been made District Sales Engineer in Cleveland, and **Dean T. Pournaras** as Service Engineer. **John J. Savignac** has been made District Service Engineer for Milwaukee branch. **Robert E. Gallatin** has been appointed District Sales Engineer at Mishawaka, Ind. and **Harold Groh** has been made District Service Engineer, to succeed **Bruce Berger,** who has been promoted to the home office engineering department.

STRESEN-REUTER

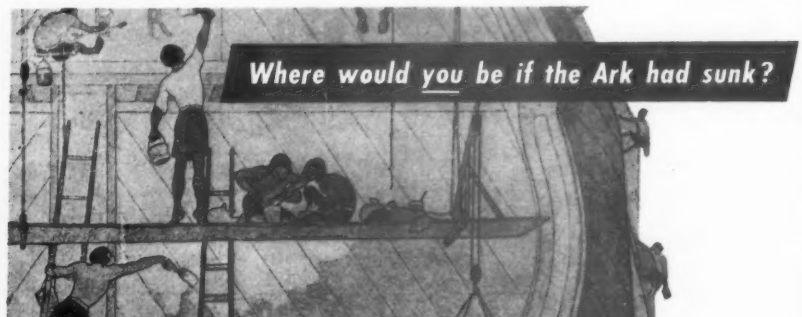
Maynard Unger has been appointed to the technical research staff, and will assist in the development of synthetic resins, driers and compounds at the Bensenville, Ill. plant.

PICC

E. G. Steinmark has been named Philadelphia District sales manager. He has served with the company as chemist, expediter and sales executive for the past six years.

CUNO

James A. Plummer has formed his own company, and been appointed industrial sales representative for the Middle Atlantic States. **Arthur T. Lawley** will be associated with him.

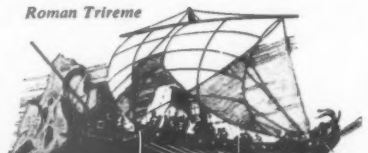


And God said unto Noah, The end of all flesh is come before me; for the earth is filled with violence through them; and, behold I will destroy them with the earth. Make thee an ark of gopher wood . . . and thou shalt pitch it within and without with pitch. Gen. 6:13, 14

IT'S NO WONDER that the chief function of paint is to *protect* that which it covers. For, after all, the very first recorded use of paint as a protective coating was in the nature of a command by the Almighty Himself when He said to Noah: "Make thee an ark of gopher wood . . . and thou shalt pitch it within and without with pitch." The pitch Noah used was, undoubtedly, a form of crude petroleum and it is rather remarkable that no other substance has been discovered that is so well adapted to protect surfaces against moisture. Still more remarkable may be the fact that the first reference to "Save the Surface and You Save All," was made by Pliny about 50 A.D. while writing of a method of boiling wax and painting ships with it, after which —"neither the sea, nor the wind, nor the sun can destroy the wood thus protected."

Thus, while the science of paint formulation has progressed mightily since Noah, we owe our very existence to the coating's protective properties. For, where would we *all* be if the Ark had sunk.

Roman Trireme



ST. JOSEPH LEAD COMPANY
250 PARK AVENUE, NEW YORK CITY 17
Plant & Laboratory: Monaca (Josephtown) Pa.

THIS IS NUMBER 4 OF A SERIES Paint is used for one or more of four purposes: for *decoration*, for the *protection* of structural materials, for *sanitation*, and for obtaining *better distribution of light or greater visibility* of an object. These functions of paint were discovered in the order named, and all of these will be treated in succeeding advertisements.

ZnO—ONE OF THE PAINT INDUSTRY'S ESSENTIALS

PATENTS

Conducted by

Lancaster, Allwine & Rommel

PATENTS AND COPYRIGHTS

424 Bowen Building,
Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel.

Light Stable Vinylidene Chloride Polymers

U. S. Patent 2,673,191. Robert J. Wolf, Cleveland, Ohio, assignor to The B. F. Goodrich Company, New York, N. Y., a corporation of New York.

A light-stable composition comprising a polymer of a monomeric mixture comprising from 75 to 90% by weight of vinylidene chloride, 5 to 15% vinyl chloride and 5 to 15% of ethyl acrylate and a minor amount of a water-soluble ammonium salt of a styrene maleic anhydride copolymer.

Wax Composition

U. S. Patent 2,676,934. John Mann Butler, Dayton, Ohio, assignor to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware.

A coating composition comprising a paraffin wax and a completely esterified styrene-maleic anhydride heteropolymer made by reacting the heteropolymer with a mixture of alcohols obtained by hydrogenation of coconut oil, said wax being present to the extent of from 70 to 99.90 per cent by weight of the total weight of the wax and the esterified styrene-maleic anhydride heteropolymer.

Mixed Esters of Phenolic Resins

U. S. Patent 2,676,158. Malcolm M Renfrew, Minneapolis, Minn., assignor to General Mills, Inc., a corporation of Delaware.

A phenol-formaldehyde resin with 80% to 100% of the hydroxyl groups esterified by means of a mixture of unsaturated higher fatty acids containing from 8-18 carbon atoms and a benzoic acid selected from the group consisting of benzoic acid and hydrocarbon substituted benzoic acids, from 5% to 20% of the total esterified hydroxyl groups being esterified with a benzoic acid.

Acrylonitrile Solutions

U. S. Patent 2,671,066. John L. Justice, Chester, Pa., assignor, by mesne assignments, to The Chemstrand Corporation, Decatur, Ala., a corporation of Delaware.

A new composition of matter adapted to be formed into shaped articles, comprising at least 5 percent of an acrylonitrile polymer containing, by weight in the polymer molecule, at least 80 percent of acrylonitrile, an organic solvent for the polymer, and from 0.1 to 5.0 percent based on the weight of the organic solvent of an inorganic acid salt of an organic amine selected from the group consisting of hydroxylamine hydrochloride, dimethylamine hydrochloride, phenylhydrazine hydrochloride, and aniline sulfate.

Non-Chalking Titanium Dioxide

U. S. Patent 2,671,031. Walther R. Whately, Lynchburg, Va., assignor to American Cyanamid Company, New York, N. Y., a corporation of Maine.

In a process of preparing a titanium dioxide pigment possessing improved resistance to chalking wherein the particles of said pigment in aqueous slurry are coated with a hydrous aluminum oxide, the weight of said oxide as Al_2O_3 being about 0.5% to about 5% of the weight of said pigment, and said coated particles are then heated, the step of heating the thus coated pigment between about 500° C. and the higner temperature at which the pigment particles increase in size, until the hydrous aluminum oxide is at least partially dehydrated.

SYNTHENOL

THE TEST TELLS

in PERFORMANCE
in QUALITY
in VALUE

Re-examine your formulations that use SPENCER KELLOGG'S outstanding dehydrated CASTOR OIL.

SYNTHENOL finishes can bring you extra profits at this time.

SPENCER KELLOGG AND SONS, INC.
Buffalo 5, N. Y.

BIG NEWS

for paint & lacquer manufacturers!

The Cowles

★Speeds Resin Cutting

Natural resins, synthetic resins, pigment chips go into solution faster with the Cowles Dissolver!

★Speeds Pre-Mixing

The Cowles Dissolver pre-mixes pigments in vehicles, producing a fast, smooth mix that's ready for further milling or fine grinding. Because it accomplishes some grinding, it enables certain grades of paint to be prepared in one operation.

★Speeds Shading

No slow-down on shading operations with the Cowles Dissolver! Paint can be sent out for sampling, corrected and ready for a second check in less time than previously required. More than one batch can be placed under the machine ready for agitation as soon as checks are complete.

THE COWLES DISSOLVER actually dissolves and disperses 2 to 20 times faster in the same space ordinary mixers require. Learn how this high-speed unit can save you time and labor — improve your product and yield per batch.

SEND FOR latest Cowles catalog

THE COWLES COMPANY, INC.
120 Trackside Cayuga, N. Y.

Please send me your latest Cowles Dissolver Catalog.

NAME

COMPANY

STREET

CITY AND STATE

Copolymerized Product

U. S. Patent 2,676,933. George E. Serniuk, Roselle, and John D. Garber, Cranford, N. J., assignors to Standard Oil Development Company, a corporation of Delaware.

A process for the preparation of a resinous polymer which comprises mixing butadiene, isobutylene and toluene in a ratio of 60/20/20, diluting the mixture with methyl chloride, cooling the diluted solution to a temperature between 0° C. and—40°C., adding thereto 10% by weight based on th feed of aluminum chloride catalyst dissolved in ethyl chloride in a concentration between 0.1 and 5% and separating the resulting resin from the reaction mixture.

Stain-Filler-Sealer

U. S. Patent 2,674,538. Orion William Berglund, Dayton, Ohio, assignor to Chadeloid Corporation, Dayton, Ohio, a corporation of Delaware.

As a coating composition for wood, a solution-suspension containing the following constituents by wieght: 372 parts butanol; 685 parts of a mixture consisting of 50% refined shellac and 50% alcohol; 30 parts of a mixture comprising 50% manila gum and 50% butanol; 2100 parts silica; and 870 parts talc.

WATER GROUND

MICA

ALSIBRONZ

EXTENDER PIGMENTS

for:

PRIMER-SEALERS

HOUSE PAINTS

LATEX-EMULSIONS

FRANKLIN MINERAL PRODUCTS

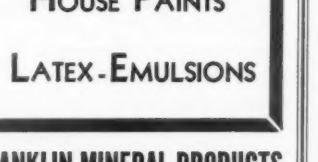
COMPANY
FRANKLIN, NORTH CAROLINA
INCORPORATED 1926
Agents in Principal Cities

Remove "Fish Eyes", Skins, Incidental Solids and Semi-Solids from Varnish and Lacquer with . . . .

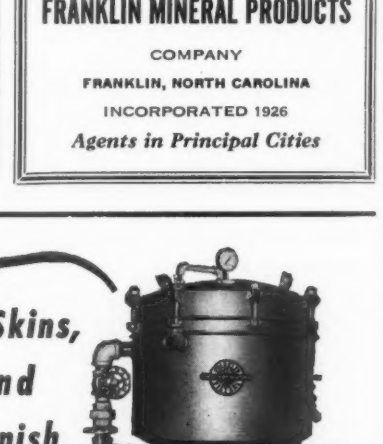
SPARKLER FILTERS

Many varnish makers now use Sparkler Filters to clarify varnish, lacquers, and other clear liquids. The brilliance and polish obtained by filtering with Sparkler Filters is far superior to results obtained with other methods of clarifying paint products.

Write Mr. Eric Anderson



Model 18-S-12 Varnish Filter (steam jacketed)



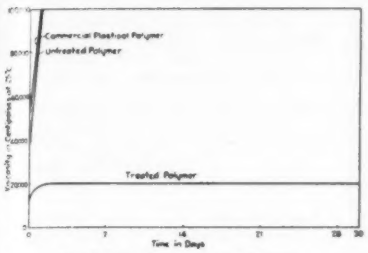
SPARKLER

MANUFACTURING COMPANY
MUNDELFIN, ILL.

Makers of fine filtration installations for industrial use for over a quarter of a century

Vinyl Chloride Polymer

U. S. Patent 2,674,593. Fred E. Condo, El Cerrito, and Jerome R. Vinograd, Berkeley, Calif., assignors to Shell Development Company, Emeryville, Calif., a corporation of Delaware.



U. S. Patent No. 2,674,593

A process for producing polymer of vinyl chloride adapted for production of plastisols which retain mobile fluidity upon storage over extended periods of time which comprises the combination of steps in seriatim of emulsifying liquid monomeric vinyl chloride having not more than about 5% by weight of another mono-olefinic polymerizable compound in admixture therewith and also containing a peroxide polymerization catalyst dissolved therein with an aqueous solution containing about 0.1 to 5% by weight of an emulsifying agent, homogenizing the emulsion by subjecting it to violent shearing action, heating the homogenized emulsion with agitation at a temperature of about 30° C. to 60° C. to thereby polymerize the vinyl chloride, venting unpolymerized vinyl chloride from the emulsion and thereby substantially freeing the polymer emulsion of unpolymerized vinyl chloride, and then subsequently heating the uncoagulated aqueous emulsion of polymer at a temperature of about 90° C. to 160° C. for a time from about 10 seconds to 10 minutes, but less than the time required to appreciably agglomerate and coagulate the polymer particles while maintaining the polymer in intimate contact with liquid water during the whole of this heating period.

Wood-Coating

U. S. Patent 2,676,893. Anton E. Budner, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

A film-forming water-in-oil dispersion for treating wood surfaces consisting essentially of from 2.25 per cent to 7 per cent by weight of wax, from 1.25 per cent to 5 per cent by weight of dimethylpolysiloxane having a viscosity within a range of from 100 to 30,000 centistokes at 25° C., from 10 to 20 per cent by weight of water consisting of droplets coated with said wax and the major portion by weight of a liquid solvent having an aniline point within a range of from—22° to 185° F., a distillation range within the limits of from 190° to 450° F., and selected from the group consisting of hydrocarbons, ethers, chlorosubstituted hydrocarbons and mixtures thereof.

Corrosion-Resistant Coating

U. S. Patent 2,676,942. Alfred L. Glass, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Navy.

An anti-corrosion coating composition comprising 100 to 102 parts of a copolymer of vinyl chloride, vinyl acetate and maleic acid wherein the vinyl chloride forms 86%, the vinyl acetate 13%, and the maleic acid 1% of the copolymer, 40 to 42 parts of a methacrylate polymer selected from the group consisting of n-butyl methacrylate polymer, isobutyl methacrylate polymer and n-propyl methacrylate polymer, 33 to 35 parts of a plasticizing material selected from the group consisting of the polyethylene glycol-di-2-ethylhexoates and tri-2-ethyl -hexyl-phosphate, and 5 to 7 parts of zinc potassium basic chromate, all in a solution of low boiling solvents.

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For roller coatings, and to control the flow in dipped coatings, and for the new types of electrostatic spraying—**HiSolv 473.**

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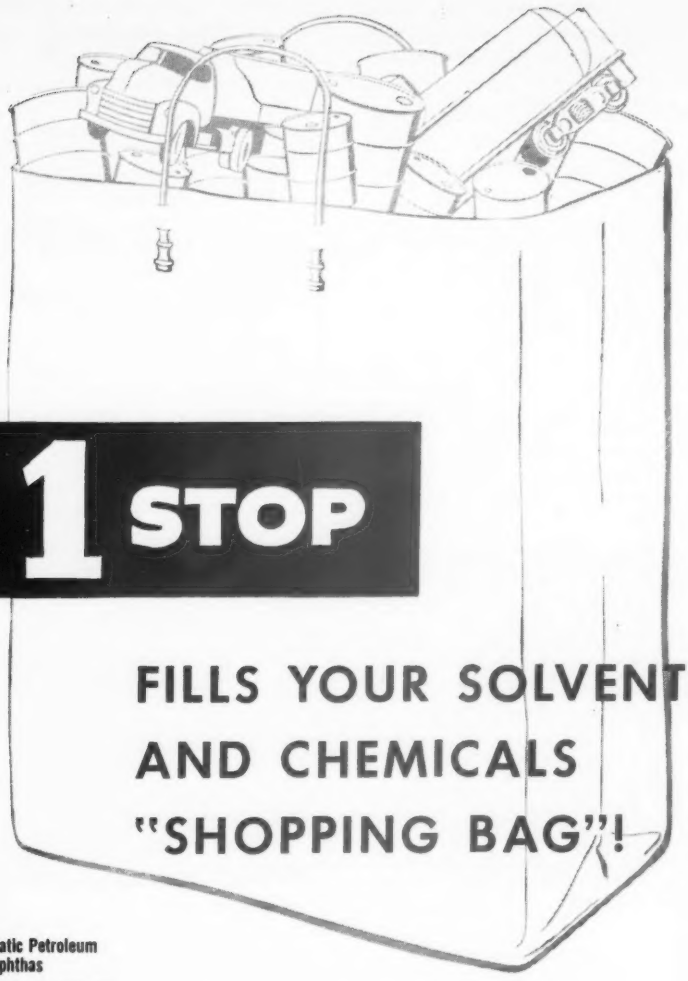

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CALENDAR OF EVENTS

June 13-18. ASTM Annual Meeting. Sherman and Morrison Hotels, Chicago, Ill.

June 21-23. Annual conference and exhibition of the Protective Coatings Div., Chemical Institute of Canada, Royal York Hotel, Toronto, Canada.

Aug. 30-Sept. 1. 34th Convention of American Soybean Assoc. Hotel Peabody, Memphis, Tenn.

Sept. 12-17. ASC meeting, Div. of Paint, Plastics, and Printing Ink Chemistry, New York City.

Production Club Meetings

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., wnd Monday.
Cincinnati — Oct., Dec., Mar., May, Hotel Alms.
Dayton — Nov., Feb., April, Suttmillers.
Indianapolis — Sept., Claypoll Hotel.
Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, Last Monday, E. Jardin Restaurant, San Francisco.

Houston, 2nd Tuesday, Seven Seas Restaurant.

Kansas City, 2nd Wednesday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, Puritan Hotel, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

St. Louis, 3rd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Diana Sweets, Ltd.

Western New York, 1st Monday, 40-8 Club, Buffalo.

NEW PROTECTIVE COATING CHEMICAL FOR ALUMINUM

ALODIZING

Alodizing with "Alodine,"* a new technique in the protective coating of aluminum, was made available for production-scale use in 1946. Since that time Alodizing has largely supplanted the more elaborate, costly and time-consuming anodic treatments in the aircraft and other industries.

Continuous and successful industrial use has clearly demonstrated the simplicity and economy of the Alodizing process as well as the effectiveness of the "Alodine" amorphous coatings, particularly as a base for paint. In fact, the paint-bond that Alodized aluminum provides has been found to be superior to that possible with chromic acid anodizing.

The corrosion-resistance of unpainted aluminum Alodized with "Alodine" Nos. 100 or 300 is excellent, easily meeting the requirements of Specification MIL-C-5541. However, a need for protection of unpainted aluminum, even better than that obtained with chromic acid anodizing, has long been recognized.

NEW IMPROVED "ALODINE" DEVELOPED By ACP RESEARCH CHEMISTS

Several years of intensive research have now led to a new type of "Alodine," designated as "Alodine" No. 1200. This new protective coating chemical forms an amorphous mixed metallic oxide coating of low dielectric resistance that provides unusually high corrosion-resistance for unpainted aluminum. In addition, it forms an excellent paint bond that approaches closely the high quality obtained with the earlier types of "Alodine."

After having been tested for conformance with Specification MIL-C-5541, "Alodine" No. 1200 is now about to go into production.

PROCESS DETAILS

"Alodine" No. 1200 is the only essential chemical needed to prepare the coating bath and the final rinse bath. One of its unique features is that it can be used in tanks in an immersion process, or, in a multi-stage power washer in a spray process, or, with a slight adjustment of pH, with brush or portable spray equipment in a manual process. This means that even where the simple production equipment is not available, or where touching up of damaged coatings previously Alodized or anodized is required, excellent protection and paint bonding can still be obtained with practically no equipment.

All three methods of application easily meet the requirements of Specification MIL-C-5541.

Process sequence for all three methods of application is the same as for other standard grades of "Alodine" such as Nos. 100, 300, and 600, viz.: 1. Pre-cleaning. 2. Rinsing. 3. Alodizing. 4. Rinsing. 5. Acidulated rinsing. 6. Drying.

Coating time in an immersion process ranges from 2 to 8 minutes and in a mechanized spray process is about 30 seconds. "Alodine" No. 1200 baths are operated at room temperatures (70° to 100°F.) and heating is required only if the bath has gotten cold after a "down" period.

RECOMMENDED USES FOR "ALODINE" No. 1200

"Alodine" No. 1200 is specifically recommended for coating wrought products that are not to be painted or are to be only partially painted; and for coating casting and forging alloys whether or not these are to be painted. "Alodine" Nos. 100 and 300 are still recommended for coating wrought products such as venetian blind slats, awnings, etc., that are invariably painted.

RESULTS OF TENSILE TESTS

This new "Alodine" not only retards visible corrosion and pitting, but as shown in the table below, the loss of ductility with "Alodine" No. 1200, both brush and dip, after 1000 hours salt spray was less than for chromic acid anodizing after 250 hours, and for "Alodine" No. 100 and a conventional chromate treatment after 168 hours exposure.

PROCESS	SALT SPRAY EXPOSURE	COMPLIANCE WITH TENSILE REQUIREMENTS OF MIL-C-5541
CHROMIC ACID ANODIZING	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	fails
	1000 hrs.	fails
BRUSH "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 100	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails
CONVENTIONAL CHROMATE TREATMENT	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails

*"Alodine" Trade Mark Reg. U. S. Pat. Off.

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PRODUCTION CLUBS

(*From page 34*)

future demands of the ultimate consumer and also the middleman, who plays a big part on our industry, and some possible approaches to a solution of these problems.

Since the customer demands control over destiny, all our marketing, product development and manufacturing plans must be geared to his requirements. It is his immediate and future needs that will determine what we develop, manufacture and sell. According to Mr. Raynolds there are seven basic functions into which he would classify market thinking, planning and action. These are marketing research, product planning, advertising and sales promotion, sales, product service, marketing administrative services, and marketing personnel development. The job of marketing research is to provide the facts and spell out to the product development group what the customer demands.

An important problem that developed as a result of the marketing research was the need for better instrumentation. The paint chemist cannot meet the demands of his customers if he has inadequate methods of measuring performance properties. Mr. Raynolds then described and illustrated several new test method developments that are giving better and more reproducible results for his company.

Continuing, Mr. Raynolds pointed out that product development is not the only area of change and challenge. There will also be demands upon manufacturing. The manufacturing task will be to provide the added volume, that is certain to develop, without necessarily increasing plant size. Increased customer demands requiring increased productivity have tended to lead industry towards the automatic plant. Industry has come to accept the word "automation" and has enlarged on its relatively limited definition of a few years ago. In its much broader concept it means continuous automatic production. This interpretation covers not only automatic handling, but goes a great deal further to include the automatic making, inspecting, assembling, testing and packaging, of parts and products, in one continuous flow.

CDIC

The 339th meeting of the CDIC Club was called to order by President Ziegler at 7:30 P.M., April 12, 1954 at Suttmillers, Dayton, Ohio. Sixty-three members and guests were in attendance.

The Technical Committee had a report from Dr. Purdy and Jack Heller telling of some of the difficulties encountered with the resins. The gist of the report was that the resins would have to be made over and the oils' length adjusted so that the viscosity of the odorless and regular resins would be the same at the same solids.

Bill Kentner reported for the Production Committee and explained how the forum would be run at the next meeting. He promised a good affair and asked all the members to get into the act.

The Evaluation Committee, also reported by Bill Kentner, stated the results of the pure compounds exposure work to be inconclusive.

The meeting was then turned over to Bob Lipp who introduced Mr. Virgil Sheets of Rohm & Haas Company. Mr. Sheets gave a very enlightening talk on the formation of Acrylic Polymers and their use as film formers in emulsion paints. His talk was high-lighted with lantern slides and a lively question and answer period developed after the talk when Mr. Sheets passed out some suggested formulations.

Baltimore

The Baltimore Paint & Varnish Production Club held a joint meeting with the Baltimore Paint Varnish & Lacquer Association on Friday, April 9th, 1954 at the Park Plaza Hotel.

The meeting of 135 members and guests got under way with Mr. A. L. Shugar, President of the Association, introducing the Association's Past Presidents who were present. Leonard Cohan, President of the Production Club, introduced the Past Presidents of the Production Club who were present.

Among those introduced were C. Burch Athey, Herman Shugar, and

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Seated—l to r: C. B. Athey, A. L. Smith, Stanley Levy, Howard G. Sholl, R. B. Shurts, A. A. Eisenberg. Standing l to r: Frank Warner, William McGill, Herman Shuger, B. Rube, unidentified, F. N. Scofield, Ralph Lamenzo, H. W. Cantwell, S. I. Wilbur, A. J. Bruning, T. R. Reece.

Federation & Production club officers seated l to r: S. I Wilbur, R. D. Bonney, L. H. Cohan, C. J. Overmyer, C. Homer Flynn. Standing—left to right: W. Wright, O. J. Hing, J. B. Timmons. Photos taken at joint meeting of Baltimore PVP Club and PVL Assoc.

Stanley Levy, all Past Presidents of both the Production Club and Association.

Mr. Cohan then introduced the guest of honor of the Clubs—Mr. Robert D. Bonney. "Bob" Bonney, a man who has done much for the Federation, was recently made honorary member of the Baltimore Production Club and this night was set aside to pay tribute to him. Mr. Bonney talked briefly on the early days of the Federation and compared it to the Club as it is today.

Mr. C. Homer Flynn, Executive Secretary of the Federation, said a few words of greeting to the Club and then turned the meeting over to Dr. Calvin J. Overmyer, President of the Federation. Dr. Overmyer talked about his recent visit to England and of attending the 25th Anniversary of the Birmingham Club. He also told of the work being done and the work planned by the Federation. He talked particularly of the work being done in the educational field.

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New England

H. P. Beardsley of the Electrochemicals Department, E. I. du Pont de Nemours & Co., Inc., addressed the April 15 meeting of the New England Paint & Varnish Production Club on "Polyvinyl Acetate Emulsion Paints". The properties of P V A emulsion—high pigment to binder power, low odor, excellent stability, and good adhesion to a variety of surfaces—were outlined by Mr. Beardsley. Slides illustrated that finishes made with this emulsion show excellent alkali resistance and do not discolor in sunlight. Formulations of a primer sealer, interior wall, and exterior paint were suggested and the role of various ingredients was discussed.

Fred Alvarez, chairman of the nominating committee, presented the following slate of officers to be voted on at the next meeting: H. Kelfer, President, A. R. Lukens, Vice President, H. Jerome, Secretary, W. R. Holmes, Treasurer, and H. Kelfer, Council Representative.

The Color Aptitude Test purchased by the Club was available for inspection. S. O. White explained the advantages to be derived by companies owning this test equipment.

Dr. Lukens outlined the work re-

cently done by the A S T M in an effort to make the specification nomenclature for extender and tinctorial pigments more valuable to the paint industry. The Secretary was instructed to express to the Federation Standards and Methods of Test Committee the New England Club's approval of the tentative specifications.

The meeting was saddened by the news of the resignation of President Harold S. Ellsworth, occasioned by his moving from our area. Fred Alvarez presented Harold with the Past President's pin, amid a standing ovation from his many friends.

Los Angeles

The regular meeting of the Los Angeles Paint and Varnish Production Club was held Wednesday evening, April 14, 1954 at Scully's Restaurant. One hundred forty members and guests attended.

The meeting was called to order by President Venatta at 8:20 P.M. The President thanked all for coming to the dinner table on time.

President Venatta introduced Dr. Alexander Schwarcman, Spencer-Kellogg and Sons, who is in semi retirement as a consultant to the company for whom he was both technical director and vice president. Following the introduction of guests and in the absence of Earl Hanson, the Good Fellowship Committee Chairman, the President reported that all members were well.

The speaker for this meeting was Dr. George W. Waters, Shell Oil Co., who spoke on Petroleum Thinners.

Dr. Waters reviewed the three characteristics of a petroleum thinner critical in establishing its quality. Firstly, it must be *compatible* with other constituents of the formulation. Rather than use the term solvency, compatibility or lack of "kick out" or a homogeneous system with the thinner is preferable—because of the questionable degree of solution in paint systems. This is best measured by Kauri-Butanol Value, Aniline Point or Aromatic content.

Secondly, the *volatility* of the thinner is important. The molecular weight fixes the volatility which is indicated by boiling range and evaporation rate. The manner of dissipation of volatiles from a paint film is influenced by factors other than only the volatility of thinner.

The third characteristic of importance to the formulator is odor. In the past few years this property has become increasingly important as a result of the stimulus given by latex and odorless paints. It is a completely subjective property, and as a result of the wide variations in human olfactory senses, a quantitative expression of odor is well nigh impossible. Dr. Waters mentioned the other properties of thinners but confined his considerations to the aforementioned three requisites.

He reviewed the problems of the refinery, starting with the crude oil and through the various refining operations. Likewise, the methods of increasing the compatibility of petroleum thinners were discussed.

The theory and manufacture of odorless thinners, compatibility characteristics and sensitivity to contamination were elaborated by Dr. Waters. He mentioned the need for stabilizers or inhibitors to maintain odor stability—or lack of it—over periods of time.

Finally, the Shell alkyd reduction technique was explained by aid of graphs and slides. This work resulted from attempts to increase the compatibility of odorless thinners with alkyds and at the same time maintain the odorless characteristic.

Decreased molecular size of the hydrocarbons resulted in greater compatibility and reduced viscosity with the alkyds. However, the volatility balance of thinner systems was seriously impaired.

Insofar as vehicle-thinner systems are recognized to be colloidal in nature and not true solutions, the addition of a non-volatile component acting as a dispersing, solubilizing or coupling agent suggested itself. The monoesters of oleic acid and alcohols like glycerol, pentaerythritol etc. have those unique properties of rendering compatibility to alkyds in odorless thinner, reduce viscosity and stabilize the viscosities. This technique is applicable to other systems.

(*Turn to page 81*)

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EXCESS POLYOL

(*From page 26*)

Very little, if any effect on the film properties of such vehicles is found by changing the excess polyol charged. It should be kept in mind that these vehicles were prepared on a laboratory scale, and the amount of polyol lost during the cooking process can vary quite widely from the amount lost in the laboratory-scale cooks. The variation in polyol lost would depend on the characteristics of the apparatus being used, as well as the cooking temperature. This, again, points out the desirability of developing a rapid, accurate method for determining the free-hydroxyl content of a finished vehicle.

It is also shown that quite appreciable amounts of maleic anhydride can be incorporated in vehicles of this type without seeding, provided the maleic-tall oil adduct is prepared to the point where no free maleic exists, before the polyol is added.

Acknowledgment

This work was done under the sponsorship of the Union Bag and Paper Corporation, whose permission to publish these data is gratefully acknowledged. The authors also wish to thank R. K. Brandt and others for assistance in obtaining the experimental data.

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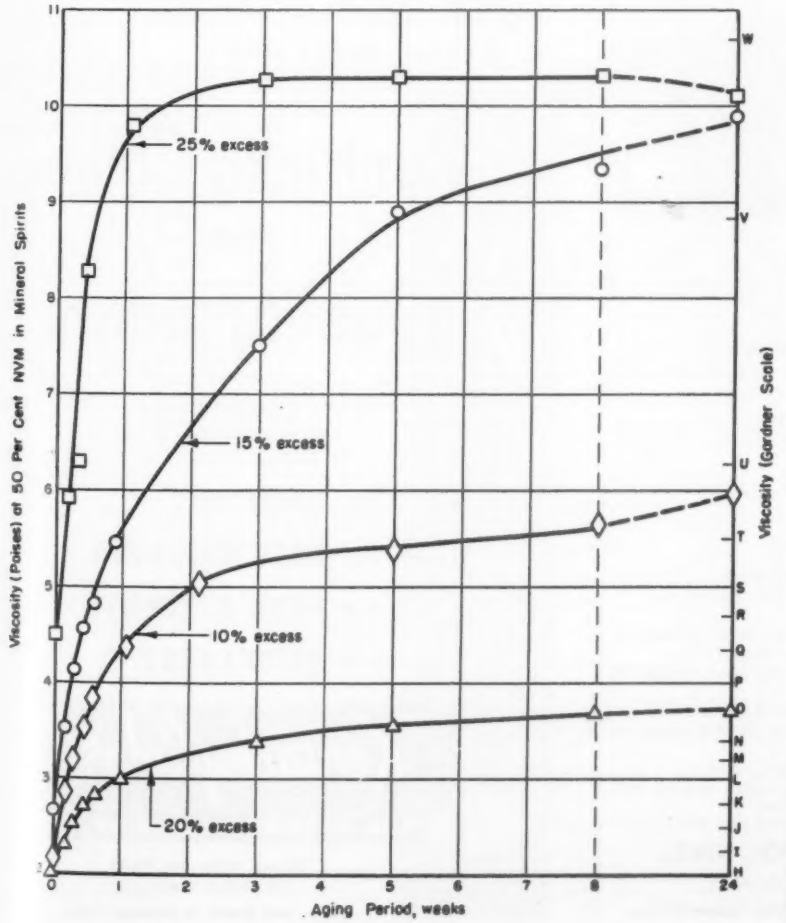
(6) cf. "Pentaerythritol Alkyds", A. G. North, *Paint Technology*, August 1951, p. 333.
(7) Konen, Clocker, and Cox, *Oil and Soap*, 22, 57-60 (1945).
(8) Driers used, 0.06% Co, 0.06% Mn, and 0.6% Pb naphthenates as metal based on varnish NVM.

Figure 5. Changes in viscosity on aging of tall oil-glycerol-maleic alkyds with the driers present.



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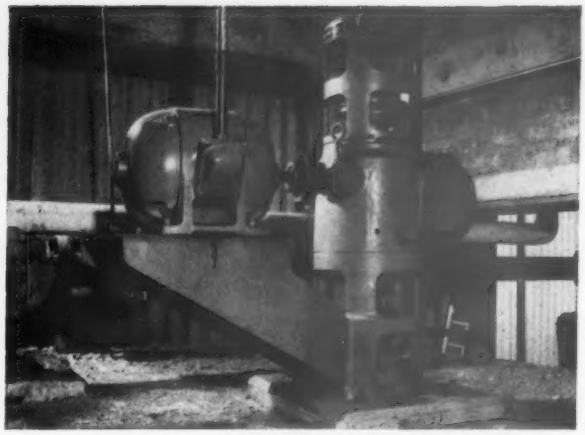

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(*From page 77*)

Philadelphia

Nominations of officers for 1954-55 and the presentation of "New Acrylic Resins for Coatings" by Dr. W. C. Prentiss, of Rohm & Haas Co., were the highlights of the April 21st meeting of the Philadelphia Paint and Varnish Production Club attended by 105 members and guests.

The slate presented by Hugh McConaghie, chairman of the Nominating Committee, was headed by the selection of Frank M. McNerney for President. Other nominations were: Vice-President—David T. Nivin; Secretary—Jim Sandeman; Council Representative—Phil J. Whiteway, Jr.; and Members-at-Large on the Executive Committee—W. Bayer and Joseph F. Vozzella. Elections took place at the meeting of May 19th.

In discussing emulsions of acrylic polymers Dr. Prentiss showed an excellent set of slides that illustrated: (1) the formation of methyl and ethyl acrylates, (2) characteristics of methyl, ethyl, propyl and butyl acrylates, (3) the acrylate polymer structure, (4) the desirable characteristics of acrylic emulsions, (5) use of dispersants with pigments in water, (6)use of preservative, (7) use of defoamer and a set of suggested formulations for: (a) clear sealer, (b) pigmented primer-sealer, (c) white and deep tone paints, (d) exterior white, (e) paper coatings, and (f) vat chipboard coatings.

Al Stover, chairman of the Technical Committee, outlined the work of four committees engaged in: Ultrasonic Dispersion of Pigments, Blue Pigments' Durability on Exposure, Red Pigments' Durability on Exposure, and Illumination of Color Standards. Meetings are held on the first Monday of each month and Mr. Stover invited everyone to attend.

The May meeting of the Philadelphia Paint and Varnish Production Club was held at the Engineers' Club, on Wednesday, May 19, 1954.

The speaker was one of the club's own members—Irwin C. Clare, assistant research director of C. K. Williams and Company, Easton, Pa. The title of Irv's talk was "Recent Developments in Iron Oxide Pigments." This included a review of the various iron oxide pigments and a discussion of the new type of red iron oxide. This pigment has brighter and cleaner mass color, very small particle size with greater ease of dispersion, and good exterior durability.

The June outing will be held at the Plymouth Country Club on Thursday, June 10th. The members of the Philadelphia Production Club will be guests of Ralph Frazier.

Northwestern

The May meeting was called to order by President Jacob Skala at 8:00 P.M. with 71 members and guests present.

The Open Forum Committee announced the Color Aptitude Test would make a good subject for a lively discussion.

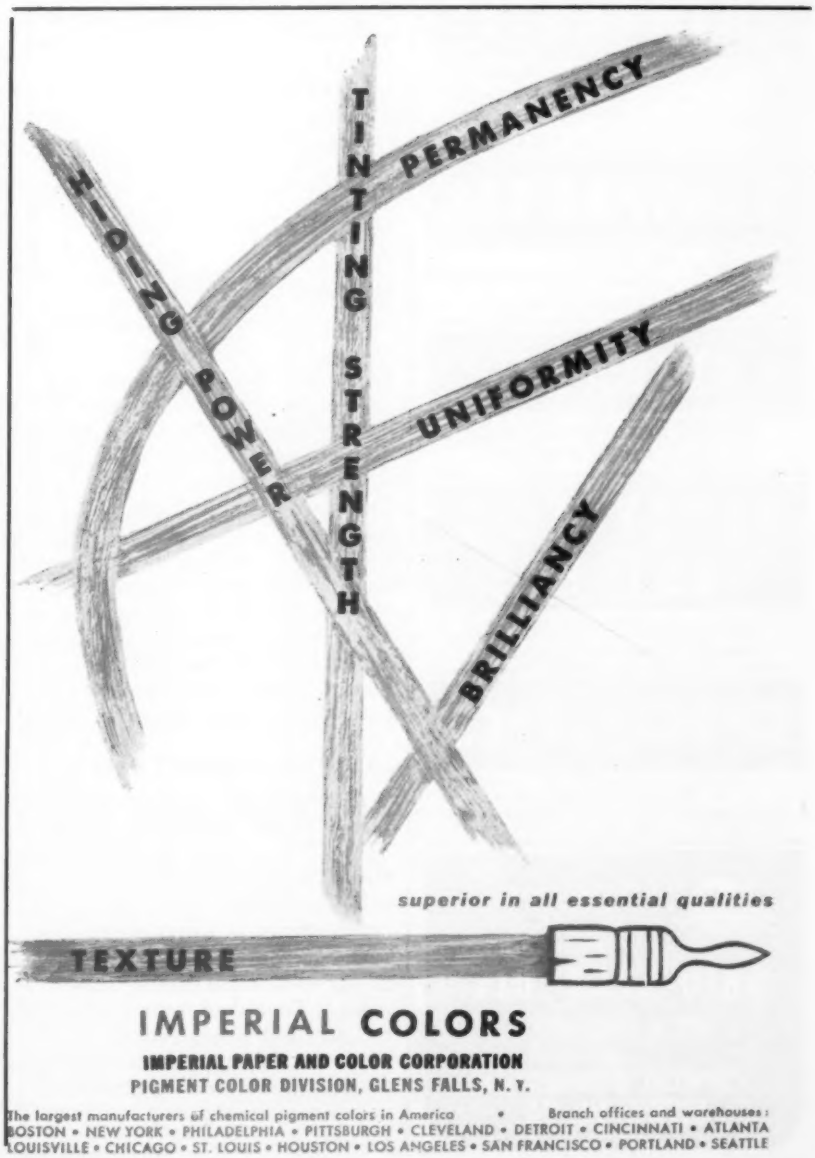
L. F. Wood, chairman of the Golf Committee, stated that the annual Golf party will be held June 18th. Invitations will be mailed out in a week.

Ed Erickson reported that the Color Aptitude Test has been received and the names have been drawn to determine the order in which it will be rented out.

Mr. Utley of the Minnesota Federal Savings & Loan Association, speaking in behalf of National Home Week, said they are planning the biggest industry promotion for September 20-27, 1954. He urged the paint manufacturers to participate in order to help promote our industry.

After a brief recess, Mr. E. P. Stark, the Program chairman, presented Mr. Vern Larson of the Bakelite Company, who spoke on "Recent Developments in Phenolic Resins and Wash Primers". Mr. Larson showed, through the use of slides, the outstanding performance of phenolic coatings on industrial floors, gym floors, and tank linings.

Two sound movies were shown, illustrating the great advance wash primers have made against corrosion of various metal surfaces, such as aluminum, zinc, cadmium, copper and magnesium. Mr. Larson further pointed out that the electrolytic resistance of film bears a direct relation to the protection of the coating. In conclusion, he said that short package life has been an objection, but now stable primers can be made in a single package.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TECHNICAL Bulletins

WATER TREATMENT

This booklet, "If You Use Water," discusses the fundamentals of the three major classifications of industrial water treatment based on ion exchange: softening, dealkalization, and deionization. Under each of these classifications, the booklet presents the major process variations. For example, the deionization section describes multiple and mixed bed systems and why different types of water supplies require different combinations of ion exchange resins and equipment to produce effluent water of a given quality.

The advantages of the various water treatment methods are discussed and interpreted in terms of the applications in specific industries. Write to Rohm & Haas Co., Resinous Prods. Div., Washington Sq. Phila. 5, Pa.

HAZARDOUS MATERIAL

Bulletin 2655, Crouse-Hinds Company's 1954 edition of its Condulets For Hazardous Locations series, contains: a table listing the commercial uses of hazardous substances and their flash points and ignition temperatures; Articles 500 and 510 of the National Electrical Code; and detailed descriptions of explosion-proof and dust-tight electrical equipment conforming to these Code Articles. The 82-page booklet is well-illustrated with photos and line drawings. Crouse-Hinds Company, Seventh North Street, Syracuse, N. Y.

LATEX IN MASONRY PAINTS

Fourteen page bulletin, entitled "Dow Latex 512-K for Exterior Paints," has been issued by the Dow Chemical Co., Plastics Dept., Midland, Mich. This bulletin discusses the use of Dow Latex 512-K, a styrene-butadiene copolymer in the formulation of exterior masonry paint. Topics covered: properties of Latex 512-K, pigmentation, protective colloids, preservatives, defoamers, stabilizers, pigment dispersants, formulations and manufacture.

CARBON BLACKS

Analytical properties of Cabot Carbon Blacks for color and ink manufacture are detailed in a 100-page booklet, "Cabot Carbon Blacks Under The Electron Microscope," published by Godfrey L. Cabot, Inc., 77 Franklin Street, Boston 10, Mass.

Principle feature of the booklet is a series of illustrations from photographic images produced in electron microscopic examination of 20 of the company's brands of color and ink blacks. Tables for each product give specific properties such as per cent of volatile matter, oil absorption, tinting strength and maximum moisture content, while graphs illustrate average particle diameter of each brand. The booklet, which is spiral bound and punched for looseleaf binding, also includes a section on rubber blacks.

POLYESTERS

Handbook on the composition and utilization of polyesters has been published by National Analine Division of Allied Chemical and Dye Corp. in a 52-page illustrated booklet.

Spiral-bound and tabbed for reference, booklet includes chapters on the preparation of polyesters and polyester varnishes, the chemistry and uses of unsaturated polyesters. Section on polyester varnishes gives table for calculations, typical formulations and procedures.

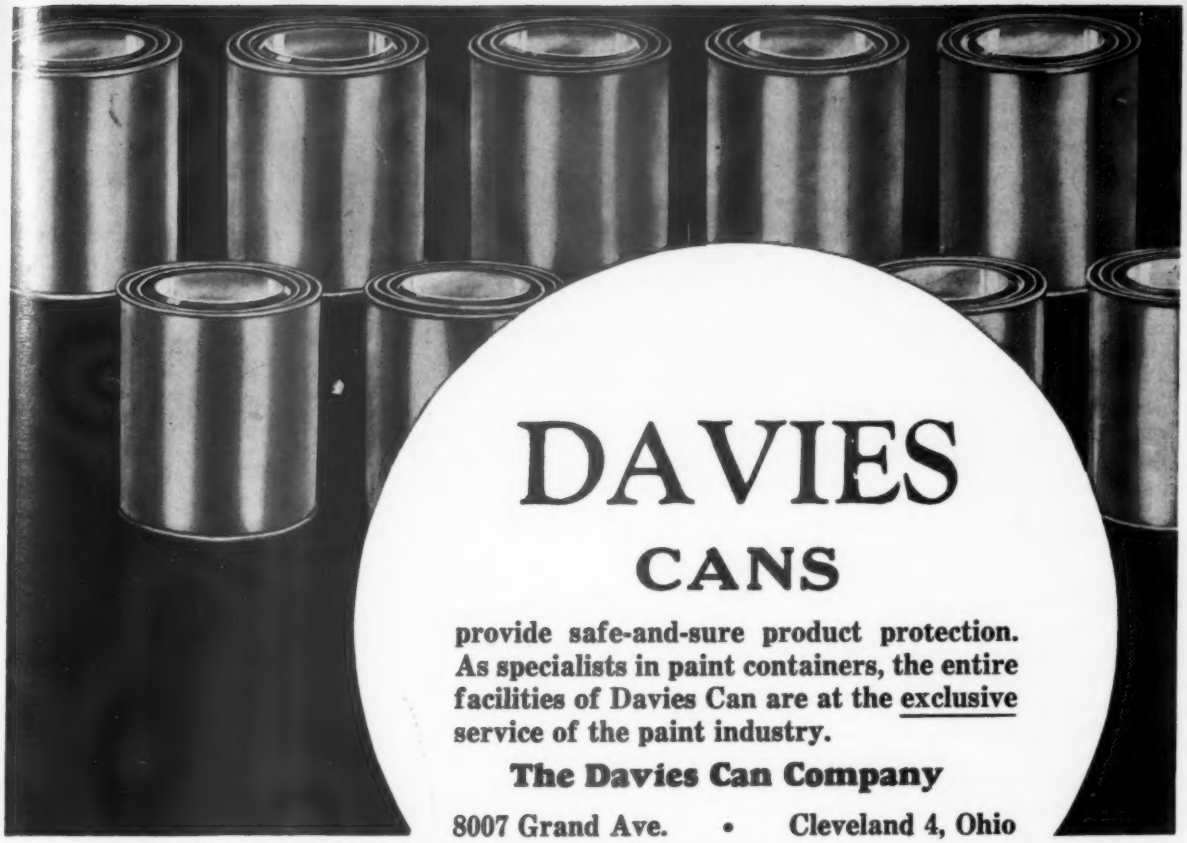
Copies are available from the company at 40 Rector Street, N. Y., N. Y.

PROTECTIVE COATING

American Chemical Paint Co. has published a six-page folder describing its Brush "Alodine" No. 1200, a protective coating chemical for corrosion-resistance of unpainted aluminum and a bond for painting of metallic surfaces.

Folder gives conditions for which use of the product is recommended and details required equipment and surface preparation. Illustrations show test results of exposure to salt spray of corrodible aluminum after treatment with various protective coatings.

Copies of folder are available from company at Ambler, Penna.



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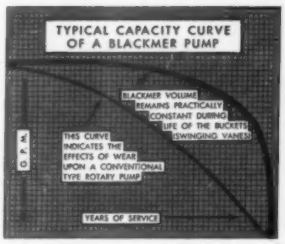
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CHEMICAL INTERMEDIATE

An eight-page booklet describing the physical and chemical properties of AERO Dicyandiamide and its applications has been published by the Industrial Chemicals Division of American Cyanamid Company.

AERO Dicyandiamide, used in the synthesis of organic chemicals, is prepared for manufacturers of resins, paints, textile finishes, metal treating compounds and anti-oxidants.

Copies of the booklet are available from the company's Manufacturers Chemicals Dept., 30 Rockefeller Plaza, New York, N.Y.

PROCESS EQUIPMENT

New bulletin published by Blaw-Knox Co. describes the company's process equipment. Illustrations show such equipment as autoclaves, reaction vessels, agitator assemblies, kettles, pilot plants and complete resin plants, 32 pieces in all. Included are specifications and general descriptions.

Bulletin (4239) may be obtained from company's Process Equipment Dept., Pittsburgh, Pa.

WETTING AGENT

Scientific Bulletin published by American Lecithin Co., Woodside, Long Island, N. Y., reports results of a study of film formation of alkyd-latex paints having different wetting agents, or no wetting agent, in their formulation.

Wetting agents used were the company's water-dispersible lecithin, "Alcolec W-14B," and a synthetic, commercial wetting agent. The photographic method used in the study was based on transmission of light through glass slides covered with films of the preparations under study. If the latex emulsion film with its pigmentation is uniform, the latex particles are not visible and a uniform pigment distribution can be observed, the reverse, of course, being true if the latex emulsion film is in a state of beginning coagulation. The bulletin is illustrated with some of the test results.

ALUMINUM

A new folder has been published by Reynolds Metals Co. describing the various Reynolds aluminum chemicals now available. Included is a section on aluminum powders, giving various grades of powders available, and their physical properties.

Also covered in the folder are the company's alumina trihydrate, activated alumina, aluminum dross and bauxite.

Free copies may be had from the company at 2500 South Third St., Louisville, Ky.

GERMAN PATENTS

Abstracts of recent German patents on new processes and products in the fields of elastomers and plastics are offered in a new bulletin (No. 87) issued by Research Information Service, 53 Nassau Street, New York 38, N. Y.

Prices of complete translations of patent applications are given with abstracts, covering such subjects as: elastomers, vinyl and ethyl polymers; acrylics, phenolics, alkyds and polyesters; and miscellaneous products and processes. Also offered is a free information service on availability of particular German patent applications.

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PIGMENT GRINDING

Results of a study of pigment dispersion obtained with a Morehouse High Speed Carborundum Mill have been published in a four-page folder by Morehouse Industries, 1150 San Fernando Road, Los Angeles 65, California.

The study involves theories of pigment dispersion with a high speed carborundum mill developed by J. J. Taylor, consulting paint technologist of Los Angeles, and various recommendations made by Mr. Taylor for grinding fine enamels.

SPRAYING TECHNIQUES

Motion studies of efficient methods of spraying various surfaces are published in a 16-page booklet, "Spray Gun Motion Study," offered by the DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio.

Continuity of motion is an important element in efficient production spraying, the booklet points out. Particular attention is paid to band spraying and correct triggering of the gun to avoid excessive overspray.

In addition to proper methods of holding the gun in spraying ordinary flat surfaces, the booklet illustrates techniques for spraying edges and corners, slender, long and open work as well as curved surfaces.

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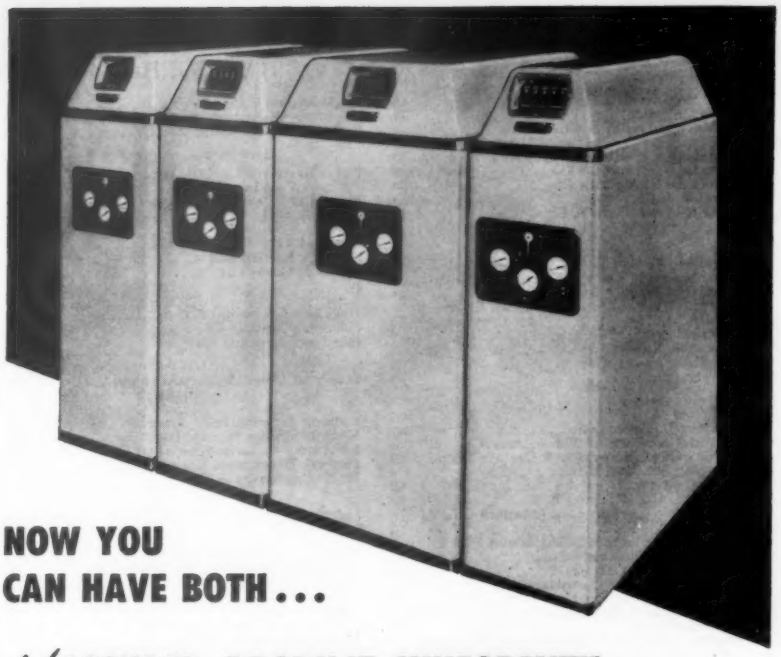

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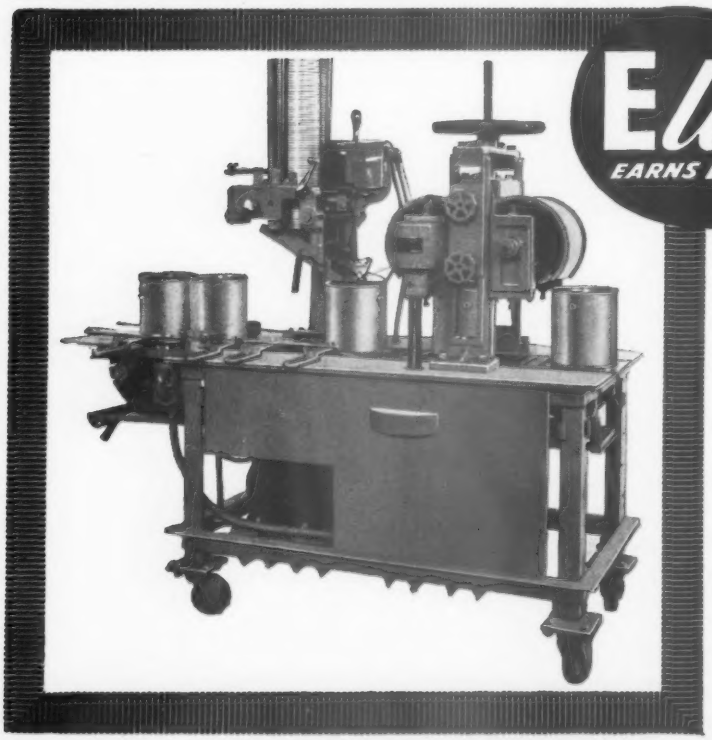

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